EDWARDS ISOCHROMATIC PLATES.

THE OPTICAL MAGIC LANTERN JOURNAL AND PHOTOGRAPHIC ENLARGER.

A Magazine of Popular Science for the Lecture-room and the Domestic Circle.

Edited by J. HAY TAYLOR.

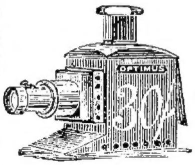
[Entered at Stationers' Hall.]

Vol. 4.—No. 47. APRIL 1, 1893. Price 1d., Post-free 2d.

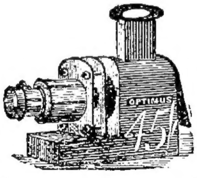
PERKEN, SON & RAYMENT, 99, HATTON GARDEN, HOLBORN VIADUCT, **LONDON. 'OPTIMUS.'**

Each Magic Lantern is efficient for exhibitions. The Lens gives crisp definition, being a superior Achromatic Photographic Combination with rack and pinion. It is fitted to a telescopic lengthening tube, so gaining increased focal accommodation. The Condenser is composed of two plano-convex lenses of 4 inches diameter. The refulgent lamp has 3 wicks (or 4 wicks 2s. extra), yielding a brilliantly illuminated picture.—Each is complete in box.

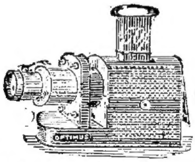
"OPTIMUS" MISSION LANTERN, Japanned Metal. BEST VALUE IN THE MARKET, 25/-



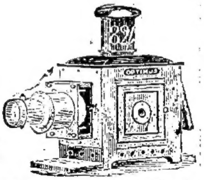
Japanned Metal 30s.



Russian Iron Body Brass Sliding Tubes, 45s.



Perforated Russian Iron Body, Brass Sliding Tubes, 50s.



Mahogany outside Body 2 Panelled Door, Brass Stages, Sliding Tubes, 82s.

LANTERN PHOTOGRAPHS, 12s. per doz. PLAIN, 18s. 6d. per doz. COLOURED.

CATALOGUE POST FREE.

'OPTIMUS' BI-UNIAL LANTERN FOR LIME-LIGHT

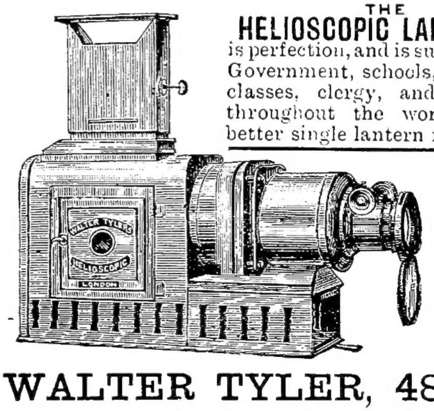
Panelled Mahogany Body, 4 doors and Moulded foot, Achromatic Photographic Front Lens, Compound Condensers Brass Stages and Sliding Tubes .. .. £8 8s.

'OPTIMUS' TRIPLE LANTERN.

The Top Lantern may be used separately with Oil Lamp. Panelled Mahogany Body, 6 doors and moulded foot, Brass Stages and Tubes, Achromatic Front Lens, Compound Condensers £14 10s

THE MAGIC LANTERN: ITS CONSTRUCTION & USE. Contains complete Instructions. Cloth Covers, PRICE 6d.

MAGIC LANTERNS & SLIDES.



THE HELIOSCOPIC LANTERN is perfection, and is supplied to Government, schools, science classes, clergy, and others throughout the world. No better single lantern made.

THE BI-UNIAL & TRIPLE Lanterns cannot be surpassed, all qualities in stock, from £7 10s.

REGULATORS & GAUGES from 14s. each.

SINGLE LANTERNS, with 4 in. condensers, portrait lens and 4 wick lamp, in case 27s. 6d.

COLOURING is done on the premises by trained artists of repute. No learners or cheap artists employed.

SECOND-HAND APPARATUS can always be found in stock at most moderate prices. Great bargains in Second-hand Lanterns and Slides.

200,000 SLIDES are kept in stock, and any set can be picked out at a moment's notice.

Send 6 Stamps for mammoth Book (420 pages), with instructions

ALL INSTRUMENTS ARE MADE AT WALTER TYLER'S FACTORIES.

CATALOGUES AND SECOND-HAND LIST POST FREE.

WALTER TYLER, 48 & 50, Waterloo Road, London, S.E.

EDWARDS LANTERN PLATES.

TRANSPARENCIES
MADE OR COLOURED
IN THE BEST POSSIBLE MANNER
BY
FREDERICK J. STEDMAN,
174, BRIDGE ROAD, BATTERSEA, LONDON, S.W.

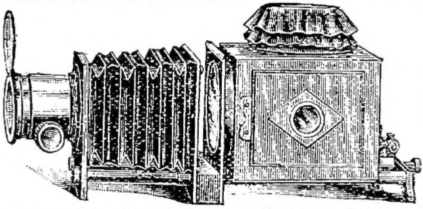
CORRESPONDENCE INVITED.

IN ANSWER TO MANY INQUIRIES PLEASE NOTE ADDRESS.

W. R. HILL & SON,
Optical Scenic Artists
Of the Royal Polytechnic Institution for 35 Years,
ALSO THE LONDON AND PROVINCIAL THEATRES ETC., ETC.
Originally CHILDE & HILL,
Sole Inventors of Dissolving Views and Effects.
Also the Chromatrope, Chromo Ediotrope, & Introducers of the Lime Light on to the Stage (Drury Lane, 1855).
Novel Effects as seen at the Polytechnic can be executed by special arrangement with gentlemen.
Speciality in first-class photo colouring with original and striking sky effects.

13, BEVERSBROOK RD., TUFNELL PARK, LONDON, N.

THE GORDON LANTERN
NICKLE PLATED METAL WITH RUSSIAN IRON BODY



(Patent applied for.)

The Most Powerful and the Smallest Efficient Lantern Made

PORTABILITY.—Weighs 7½ lbs. and Measures 12½ × 6 × 5 in.
SIMPLICITY.—Jet fixed in new Jet Carriage and never requires centering. No part of Lantern except chimney need be removed for packing. Can be set up and lighted in less time than any other lantern.
POWER.—The Condensers are 4½ in. diameter, and the front lenses are specially made for the lantern.
Price with 3 front lenses of 6, 8, and 10 in. dia. and Case **£6 15s.**

J. TROTTER, 28, Gordon Street, Glasgow.

PAGET PRIZE
LANTERN PLATES

SLOW OR **RAPID**

for contact printing by artificial light, or for reduction in Camera by daylight. They give a range of tone from **Black** to **Red**, according to exposure and development.

Which are about six times quicker than the Slow, are for reduction in Camera by artificial light, or may be used for contact printing with very dense negatives or very short exposures. These give only black tones.

PRICE:—Either Rapidity, 3¼ in. × 3¼ in., 1/- per dozen.

WOOD'S
LANTERNS AND SLIDES
ON SALE OR HIRE. 100,000 Slides to Select from.
PLAIN SLIDES, 12s. per doz.

The "EUPHANERON" LANTERN, with the four-wick W Lamp, £4 4s.
The "CHEAP" LANTERN, with 4-in. Condenser and three wick Lamp, £1 10s.
"MAGIC LANTERNS: How Made and How Used," by A. A. WOOD, post free, 1s. 2d.

Wood's New List of Slides and Lanterns. Post-free for One Stamp.

E. G. WOOD, 74, CHEAPSIDE, LONDON.
And HORNE, THORNTHWAITE & WOOD, 416, STRAND, LONDON, W.C.

THE OPTICAL
MAGIC LANTERN
JOURNAL
AND
PHOTOGRAPHIC ENLARGER.

EDITED BY J. HAY TAYLOR.

Vol. 4.—No. 47. Entered at Stationers' Hall. APRIL 1, 1893. Price One Penny.

CONTENTS.

PAGE
Inside the Lawson Saturator 60
Trimming Lamp Wicks 61
How to Get. Please and Retain an Audience 61
Registering Lanterns 63
How to Enlarge 63
Invention of Dissolving Views 64
A New Name for a Magic Lantern 65
Transparency Making 69
Writing and Sketching on the Screen 68
New Apparatus 69
The Lanternists Den—Notes on Making a Lamp 70
Editorial Table 71
Correspondence 71
Notes and Queries 72

Notices.

The *Optical Magic Lantern Journal and Photographic Enlarger* is issued on the 1st of every month, price One Penny, and may be obtained from all Newsvendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:—

		Continental.	United States.
12 months	1/6	2/-	60 cents.
Single copies	-/1½	-/2	6 ,,

Advertisements (Scale of Charges), displayed:—

	£	s.	d.
Front and back pages, by arrangement.			
Ordinary page (whole)	3	0	0
,, ,, (half)	1	15	0
,, ,, (quarter)	1	0	0
,, ,, (eighth)		10	0
,, ,, per 1 inch in column		6	0
,, ,, ,, ½ ,, ,,		3	0

Special quotations for a series.

Exchange Column, General Wants, &c. (not Trade)—First 20 words, 6d.; and for every 3 additional words, 1d.

Advertisements must reach the office not later than the 24th of each month. All cheques and postal orders to be made payable to Taylor Brothers.

Editorial communications must be addressed, J. Hay Taylor. Advertisements and business communications to **Taylor Brothers, 56, Chancery Lane, London, W.C.**

American Agents:—The International News Co., 83 and 85, Duane Street, New York City.

NOTICE.

Many Correspondents still forward their Communications to the Old Address. Will they please note that Our Address is

56, CHANCERY LANE, LONDON, W.C.

Notes.

The business of the late A. W. Scott will be continued by Scott & Co., 401, Cowbridge Road, Cardiff, under the supervision of Prof. Scott.

* * *

When we reduce the receipts and expenditures to a common standard, says Mr. R. Humphreys, of the United States of America,—a 16-candle lamp—and express the relative cost of the systems in percentage of gas gross earnings, we find the following result:—"Cost of gas in percentage of gross earnings, 71 per cent.; cost of electric light in percentage of gross earnings of gas for equal unit of light, 91 per cent.; or, otherwise expressed, the unit of light costs by electricity 20 per cent. more than by gas."

* * *

During some experiments at Toulon with a submarine electric lamp, it was found that at a depth of 30 feet it illuminated a radius of about 100 feet.

* * *

On the 9th ult. J. W. Reed, Esq. (Quekett Microscopical Club) read a paper at Unity Church Literary and Scientific Society, Islington, on "Some Swiss Glaciers, High Passes, and Snow Peaks," profusely illustrated by about 80 photographs. The large audience fully appreciated the detailed accounts of the majestic scenery shown. The slides on the whole were highly commendable.

* * *

Messrs. Wormald & Co. of Sutton, announce their intention of introducing a new snap shot camera, to take four small pictures on a lantern size plate.

On page 65 a correspondent suggests that a better name than "magic lantern" might now be introduced for the popular instrument which at present goes under that name. We shall be pleased to hear what our readers have to say upon the subject.

* * *

The judging committee at the Crystal Palace Exhibition, to be held from 10th to 29th inst., will be as follows:—Hon. Slingsby Bethell, Messrs. Valentine Blanchard, J. Pattison Gibson, F. Mason Good, W. Lang, Jun., Edgar G. Lee, F. P. Cembrano, Jun., F. Stanley Little, P. Macnab, H. L. Noel-Cox, Francis Powell, J. P. S. Roberts, Leslie Thomson, F. York, R. Keene, and S. Lindsay Johnson.

* * *

Some time ago it was suggested at the West Surrey Photo Society that lantern limes should be packed up singly as well as in dozens. We understand that several dealers have adopted the hint, and that one lime packed in a hermetically sealed tube may now be purchased.

* * *

A very complets series of lantern slides on "Corals and Coral Reefs," will shortly be published by Newton & Co., of Fleet Street. They are made from the negatives taken by Mr. W. Saville, Kent, to illustrate the fine work on "The Great Barrier Reef of Australia," recently published by W. H. Allen & Co.

* * *

The Provinces are by no means behind London in limelight lectures. Mr. E. J. Forster, Hon. Secretary of the Newbury Guildhall Club, has prepared a lecture on "The British Empire, its labour and trade." It is contemplated to deliver this lecture in various central towns in the North and Midlands. The inaugural lecture was given on 2nd ult., at St. George's Institute, Hanover Square, W., a large number of influential persons being present. The lecture was illustrated by about 100 views, projected by means of the optical lantern, under the superintendence of Mr. S. Wright, Jun., and the illustrations were greatly applauded. With such a good subject, able lecturer, and clever lanternist, this lecture should be well received in any town which may be favoured with their presence. The lecture will be repeated on 12th inst., at Queen's Hall, Westminster, at 8.30 p.m.

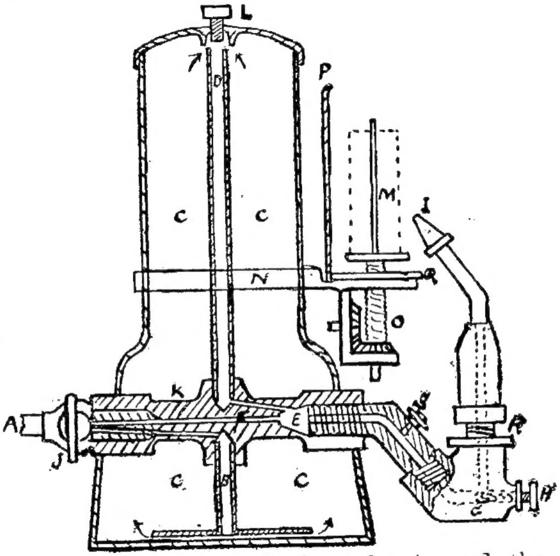
* * *

In connection with the Undenominational Mission, a lecture was given a few weeks ago at the Royal Hotel, Edinburgh, at which most of the lantern slides views exhibited were taken by means of the Todd-Farret, flash lamp invented by Mr. Andrew H. Baird, of Lothian Street, Edinburgh.

Our readers will be sorry to learn of the death of Mr. G. W. Wilson, the founder of the well known firm of G. W. Wilson & Co., of Aberdeen.

Inside the Lawson Saturator.

Since the publication of the sketch and particulars of this saturator in the March number of *The Optical Magic Lantern Journal*, we have received quite a deluge of letters asking various questions relative to interior of this apparatus. To answer each query individually would occupy considerable space, so we have collated the letters under various headings and will endeavour as far as possible, with the aid of a sectional sketch, to give the descriptions desired.



The oxygen enters at the tube A, and the supply is admitted to two channels, the openings to which are controlled by the movement of a regulating tap J. One supply of oxygen is conducted from the regulating tap to the tube B by means of the passage shown. At the lower end of B the gas issues in all directions by reason of the plate attached at the end of the tube. It then ascends at either side of the bar K, through the saturating chamber C, which has been previously charged with (say) benzoline, and finally escapes down the tube D, thence to E, and finally to the nipple I. The oxygen having become saturated will, when a light is applied, burn not unlike house-gas.

ARCHER'S LANTERN NOVELTIES.

THE "IDEAL" LANTERN. The most perfect Single Lantern in the market. Enthusiastic Testimonials from Paul Lange, Esq., G. E. Thompson, Esq., Manchester Camera Club, and many others. Will show to perfection any distance, 8 feet to 80 feet from the screen.

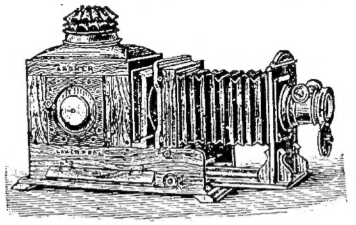
THE "IDEAL" DISSOLVER AND CARRIER FRAME. The most perfect ever invented for Single Lanterns. Highly praised and ussd by the editor of this journal. Price 25s.

A Wonderfully Good Safety Jet. Price 16s.

The "Photinus," greatly improved, the most powerful Oil-Light Lantern in the world. Price complete £4 4s.

New Set of Slides, "Slum Life in our Great Cities," direct photos. Price 12s. per dozen. Reading 6d. post free.

New Drawing Master Slide or Sketcher. Price 35s.



Price **£8 15s. COMPLETE,**
or Plainer Finish **£7 5s.**

New Illustrated Catalogue, Many Novelties, Post Free One Stamp.

ARCHER & SONS, Patentees and Manufacturers, 43 to 49, LORD ST., LIVERPOOL. Estd. 1848.

GENERAL WANTS, &c.

LANTERN 3¼ Condenser, Carrier, Rackwork, Lens, 37 Slides, 3 Sets, 25/-. Must Sell.—EDWIN, 27, Leipsic Road, Camberwell.

SCOTT'S Warm Air Saturator, the Most Powerful Limelight without Hydrogen. Price 30/-.—E. BAKER, Salisbury.

12 Feet Lantern Sheet, 9/-. Avery 4 ft. × 4 ft. × 2 ft., 25/-. Violin, Bow, Fork and Strings 15/-. Quantity of Glass Bottom Dishes.—W., 53, Chalk Farm Road, London.

FILMS for Tracing Lantern Slides, 3¼ size, 4½d. per dozen; 1/- 3 dozen.—PHOTO, 11, Bothwell Street, Glasgow.

20 FEET Oxygen Cylinder Pressure Gauge, Beard's Regulator, 20 Feet Hydrogen Cylinder. All in Perfect Condition, been very little used. What Offers? — JOHNSON, Sydenham House, Grey Flatt, Carlisle.

WALTER TYLER'S "HELIOSCOPIC" LANTERN.—Splendid Illumination, Guaranteed Perfect and in Condition as Good as New. List Price £4 4s., will sell for £2 15s.—T. CLAYTON, Gas Works, Machynlleth, N. Wales.

PHOTOGRAPHIC Lantern Slides.—List of new Subjects at 7/- dozen, now ready. A Large Variety of Stereoscopic Slides, 6/- dozen.—J. W. MCLELLAN, Publisher, 36, St. Paul's Road, Canonbury, London.

LANTERN, Lecturers, Mahogany Body, Superior 4 inch Condenser, Oil or Limelight Accessories, and 200 First Class Popular Slides. Cheap, will Divide.—HARRIS, Accountant, 117, Fleet Street, London.

BAMBOO FRAMES, Opaque Screens, Washing Ditto. Wanted address of actual Manufacturers of these.—P. P., c/o Optical Magic Lantern Journal.

DEALERS! LOOK OUT!!

Some Big Novelty Slide Sets for 93-4.

FURTHER PARTICULARS LATER ON.

SPECIAL LANTERN SLIDES.

Studies by the Sea.

YACHTS, STEAMERS, BATHERS, PADDLERS, WAVES, LIFE BOAT LAUNCHING, Etc.

WINTER—SNOW AND FROST.

LISTS FREE.

Messrs. ARCHER & SON, Liverpool, say:—"The Slides are very fine, and much appreciated."

GRAYSTONE BIRD, Photographer, **BATH.**

WOOD BOXES.

To Hold 50 Lantern Slides, 1/4 each.

J. RHODES & SONS, Castle Saw Mills, Keighley.

COLOURING, &c.

Slides artistically coloured from 4/6 doz. Slides carefully prepared from Negatives, Photos, Engravings. Plates and Films Developed. Retouching, Printing, Enlarging, and Finishing in Oils or Water Colour.

T. T. WING, CHATTERIS, CAMBS.

177 Walworth Road,

LANTERN SLIDES ON HIRE
1/- DOZEN
ELECTRICITY
SLIDE COLORING
PHOTOGRAPHY
BEST & CHEAPEST HOUSE IN LONDON

177 Walworth Road,

T. J. DOGGETT,

Manufacturing Tin-Plate Worker to the Optical Lantern and Photographic Trades,

4, CHURCH LANE, UPPER ST., LONDON, N.

Lanterns in Japanned Tin-Plate or Mahogany—All accessories for Lantern Trade kept in stock.

The prices of the Back Numbers of the *Optical Magic Lantern Journal* are at present as follows:—Postage extra.

Vol.	No.			
1 ..	1	June	1889,	2/6
1 ..	2	July	,,	1/-
1 ..	3	Aug.	,,	1/-
1 ..	4	Sept.	,,	1/-
1 ..	5	Oct.	,,	1d.
1 ..	6	Nov.	,,	1d.
1 ..	7	Dec.	,,	1d.
1 ..	8	Jan.	1890,	1d.
1 ..	9	Feb,	,,	1d.
1 ..	10	March	1890	1d.
1 ..	11	April	,,	1d.
1 ..	12	May	,,	1d.
2 ..	13	June	,,	1d.
2 ..	14	July	,,	1d.
2 ..	15	Aug.	,,	1d.
2 ..	16	Sep.	,,	1d.
2 ..	17	Oct.	,,	1d.
2 ..	18	Nov.	,,	1d.
2 ..	19	Dec.	1890	1d.
2 ..	20	Jan.	1891	9d.
2 ..	21	Feb.	,,	1d.
2 ..	22	March	,,	1d.
2 ..	23	April	,,	9d.
2 ..	24	May	,,	6d.
2 ..	25	June	,,	1d.
2 ..	26	July	,,	6d.
2 ..	27	August	,,	3d.
2 ..	28	Sept.	1891	1/-
2 ..	29	Oct.	,,	9d.
2 ..	30	Nov.	,,	2d.
2 ..	31	Dec.	,,	3d.
3 ..	32	Jan.	1892	9d.
3 ..	33	Feb.	,,	6d.
3 ..	34	March	,,	1/-
3 ..	35	April	,,	6d
3 ..	36	May	,,	3d

No 37 & up to Date 1d. each.

W. WATSON & SONS, 313, High Holborn, London,
MANUFACTURERS OF HIGHEST CLASS OPTICAL & SCIENTIFIC INSTRUMENTS.

BI-UNIAL AND TRIPLE LANTERNS,
THREE AND FOUR-WICK OIL LANTERNS,
of Highest Quality and Efficiency.
LANTERN TRIPODS, GAS APPARATUS, SCREENS, AND SCREEN STANDS.

AN IMMENSE STOCK OF FINEST
PHOTOGRAPHIC VIEWS,
Illustrating all parts of the World. **12/-** per dozen.
SPECIAL PHOTOGRAPHIC CAMERAS
For taking Lantern Pictures.

An Illustrated Catalogue sent free to any address on application. Ask for Lantern List.

W. WATSON & SONS,
ESTABLISHED
1837.

313, HIGH HOLBORN LONDON.
9, 10, 11, 16, 17, FULWOOD'S RENTS, LONDON.
251, SWANSTON ST., MELBOURNE, AUSTRALIA

BRIN'S OXYGEN.

THE BEST RESULTS CAN ONLY BE OBTAINED WITH BRIN'S OXYGEN
INSIST UPON HAVING BRIN'S OXYGEN, AS INFERIOR OXYGEN IS BEING SOLD BY OTHER MAKERS.

Test the quality of the oxygen supplied to you, or bring it to one of the Works of the Brin's Oxygen Companies, where it will be analysed free of charge. Brin's oxygen is from 25 per cent to 35 per cent purer than other kinds now being sold, and lasts twice as long.

To ensure good quality, good measure and safety from accidents, buy only of the BRIN'S COMPANIES and their accredited agents.

A large Assortment of Cylinders, Gauges, Regulators, Inhaling Apparatus and Fittings kept in Stock.

PRICE LISTS AND FULL PARTICULARS ON APPLICATION. ADDRESSES:—
LONDON: BRIN'S OXYGEN COMPANY, LIMITED, 34, Victoria Street, Westminster, S.W.
MANCHESTER: THE MANCHESTER OXYGEN (BRIN'S PATENT) COMPANY, LTD., Great Marlborough Street, Manchester.
BIRMINGHAM: THE BIRMINGHAM OXYGEN COMPANY, LIMITED, Saltley Works, Birmingham.

Telegraphic Addresses:—"Brin's Oxygen, London." "Oxygen, Manchester." "Baryta, Birmingham."

THE "CADETT" LANTERN PLATE IS THE BEST.

CADETT & NEALL, ASHTEAD, SURREY.

CHIEF DEPOTS (Wholesale and Retail):

LONDON.—W. WATSON & SONS, 313, High Holborn, W.C.
ABERDEEN.—G. W. WILSON & CO., 25, Crown Street.
BIRMINGHAM.—SOUTHALL BROS. & BARCLAY, Dalton Street (off Butt Street).
BRADFORD.—PERCY LUND & CO., St. John Street.
BRIGHTON.—HARDCASTLE & CO., 71, East Street.
BRISTOL.—H. HUSBANDS, 8, St. Augustine's Parade.
BURTON-on-TRENT.—R. KEENE, 52, High Street.
CARDIFF.—JESSE WILLIAMS & CO., Park Hall Buildings.
DERBY.—RICHARD KEENE, All Saints.
DOVER.—MARTIN JACOLETTE, North Brook House.
DUNDEE.—G. LOWDEN, 65, Reform Street.
EDINBURGH.—J. M. TURNBULL, 6, Rose Street.
GLASGOW.—G. MASON & CO., 180, Sauchiehall Street.
GREAT YARMOUTH.—E. J. PRATT, 165, King Street.
HULL.—C. P. GIBSON, 16, Whitefriar Gate.
JERSEY.—J. RENOUF, Jun., 45 Don Street.
LEEDS.—REYNOLDS & BRANSON, 14, Commercial Street.
LIVERPOOL.—J. J. ATKINSON, 37, Manchester Street.
MANCHESTER.—J. T. CHAPMAN, 7, Albert Square
NEWCASTLE.—F. K. HUDMAN & CO., 2, St. Nicholas Buildings.
NEWPORT (MON.)—TOWNSEND CYCLE CO., Limited, 113, Commercial Street.
NORWICH.—A. E. COE, London Street.
SHEFFIELD.—J. PRESTON, 2, High Street.

OTHER TOWNS IN FUTURE ADVERTISEMENTS.

When the regulating tap is turned slightly to one side, a supply of pure oxygen is admitted by means of the conduct F to E, at which point the gases mix.

According to the relative proportion, to a certain degree, of the pure and saturated oxygen abmitted by the adjustment of J, so is the intensity of light.

When the saturator is not in use all escape of vapour may be prevented by closing the valve G, at the bottom of the nipple. This valve also plays a prominent part in connection with the regulator on the gas-bottle, for as no two regulators are of exactly the same strength, it can be adjusted to a nicety to open or close the nipple so as to prevent any noise caused by reason of there being too great a supply of gas.

The lime M, support, and turning arrangement O, are held in position by the band N, which clamps round the body of the saturator, whilst the distance between the lime and the nipple is regulated by the lock-nut Q.

In order to raise or lower the light to suit the requirements of any make of lantern, the screw R is brought into play.

Should the lime at any time break and fall off, the protector or shield, P prevents the gases playing upon the body of the saturator.

The above sketch shows the style for use with a single lantern, but for more than one light an extention tube with nipples is attached at S, and conducted to their relative positions, so that only one saturator is required for several jets.

——:o:——

Trimming Lamp Wicks.

By R. Clive Bruce.

It cannot be denied that oil lamps for lanterns are at times a source of trouble, and this trouble arises mainly from the smell and smoke given off.

In endeavouring to obtain the very best light from a lamp, one is apt to raise the wicks as much as possible short of smoking; but after they have remained at this pitch for a short time, the flame gradually heightens itself until its highest point gives off smoke.

It is by no means an easy task to trim a wick properly, unless with the aid of a patent trimmer mentioned some months ago in the columns of this journal; but this is a luxury which I for one cannot afford.

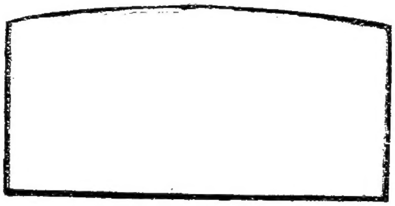
Cutting or trimming a wick with a pair of scissors alone is to a large extent chance work, for one is apt to cut either with too great or too small an arch, or to leave slight projections at the wick ends, all of which tend to produce forks in the flame, and consequently smoke and smell when the flame is raised.

I have adopted a cheap, simple, and effective guide for ensuring a wick to be trimmed with the correct arch to give the best effect; and have pleasure in submitting it to my fellow readers, knowing full well that I shall in return receive valuable hints from some co-worker in lantern matters.

The wicks of my lamp being two inches wide, I took a piece of tin 4½in. long by 1in. wide, and ruled a line at the centre of the strip across the short way. By means of a pair of compasses I next described two arcs and cut away the metal so as to leave the strip with two mounds so to speak, and afterwards bent the two halves of the strip at the line mentioned, so that these two halves were identical in all respects.

When bending the strip, it must be done over a piece of metal about the thickness of an ordinary lamp wick. The guide will now be finished and will consist of two sides exactly the same, and connected together in the manner of a pair of domestic sugar tongs, the ½in. of the strip being taken up in the bend.

The annexed figure is of the exact size and curvature, and will be found very useful for cutting the wicks so as to obtain the best light from them.



When it is desired to cut the wick it is first turned up about an inch or so, and the guide slipped on it sideways and clamped into position by the finger and thumb of the left hand, whilst by means of a pair of scissors the upper part of the wick is trimmed at one sweep close to the rounded end of the guide, which ensures uniformity.

——:o:——

How to Get, Please and Retain an Audience. No. III.

How to Retain an Audience.

By E. Baker (Salisbury).

The very hurried compilation of my last month's notes, which were written without revision, and placed at the last moment in the editor's hands, must be my excuse to our numerous readers for errors, both typographical and otherwise, the chief being the substitution of *Dramatic* for *Dioramic ;* and in paragraph three, the apparent omission of a line, rendering the sense somewhat obscure. The intelligence of those who took pains to peruse the article doubtless supplied all that was necessary to construe its general purport.

It may appear at first sight that very little remains to be said in dealing with section three of title, and except for those who contemplate repeated, and perhaps, periodical exhibitions, little need be advanced on the subject. Where, however, some reliance is necessarily placed on sustaining the interest over a more or less prolonged period, it is advisable to consider carefully the resources at hand in the way of attractive yet varied subjects, so interweaving the instructive element with the purely entertaining, that the audience may be maintained in a good humour from the first item to the close of the programme. This is all the more necessary where the locality is such that, to a large extent, the company is repeatedly made up of the same individuals then it would probably be where only a small population existed.

Even here, with a judicious regard for the class of people usually attracted, it should not be difficult to avoid going over the same ground, and so wearying the less intelligent portion of the house, who are sometimes the most difficult to please. I have avoided personal references as far as possible, but there are occasions when "an ounce of practise" is preferable to a "pound of theory," and as I take it that the object of these papers (whether on this or kindred subjects) is mutual aid, I give my experience simply for what it is worth.

On a recent occasion the following was substantially the bill of fare for an audience of over 1,000 persons, the event being a popular gathering for the masses—Local Scenery as an Introduction: allusion to passing incidents of interest—railway trip to Liverpool, and scenes by the way: Inspection of some of its attractions—Steamer to New York—Half-an-hour amongst its public buildings and through its streets—A Winter narrative of street life—The news boy's debt—Summer scenes in its parks, and excursions down the river—Across to Brooklyn—How to get to Chicago—Trip to Niagara Falls—Wondrous effects: Summer and Winter—Other Cities to visit: Boston, Philadelphia, Washington—Back to New York—Steam to Southampton, *via* Isle of Wight—Ramble round the old walls and through the quaint gate-ways—Back to Salisbury. Such is a rough outline of a possible tour, avoiding the cut and dried "reading" or printed "lecture," and introducing "live incidents" culled from the daily papers, or gathered from observation and intercourse with others. The average audience cares little for dry statistics or prosy commonplaces drawled out in a sleepy fashion behind a reading-desk.

Or take another example, which might be appropriately designated "Striking Scenes and Stirring Stories"—a prolific subject—with almost endless possibilities—The Mountains and Lakes of Scotland—The Glens and Waterfalls of Wales—The Fiords and Ice-capped Heights and Glaciers of Norway—or even the boundless stretch of majestic scenery in the Derbyshire Peaks—The winding Devonshire rivers, or the matchless Northern Lakes, and you do not even begin to exhaust the subject ; while you may weave in stories of town and country life in the most natural and realistic manner—The Street Tumblers passing through some Village—The Women of Mumbles Head, thrilling with their heroic deed the tourist who visits Swansea—The Signal Box, reminding one of dangers narrowly escaped while on the iron road, and so, without multiplying instances, alternating "scene and story" till the allotted space of time has more than vanished, and the appetite is not satisfied, thus leaving a tempting bait for the next and subsequent occasion. If it is practicable, as it often is (though one cannot rely on these supplementary aids), to introduce other elements such as music, which may be employed with wonderfully charming effects if suitable themes are selected, relief is afforded both to operator and lecturer, in some instances. It is possible to give vocal illustration to such well-known melodies as the "Village Blacksmith," "Death of Nelson," "Ship on Fire," "Ivy Green," and many others, which can thus be interpreted both pictorially and musically.

I have not alluded in the scope of my treatment of the subject to the more sensational elements sometimes introduced, such as sleight of hand, ventriloquism and kindred performances, which are to my mind outside the range of a high-class lantern entertainment, which, when properly managed, should be sufficient to interest and amuse persons of almost all ages.

To avoid traversing ground occupied not only in my last article but also in the excellent paper by Mr. Chadwick, which I can fully confirm. I am more than ever of the opinion that even juvenile audiences are more fully and permanently pleased by avoiding the beaten track of childish nonsense, often regarded in the past as essential. During the Christmas week it was my province on two occasions to entertain audiences of 1,200 children, and frequently since then of 300 to 500 of similar ages, and in neither instance were a dozen slides shown which would have been regarded as essential in days gone by. In each case for two hours the interest was unabated, and the difficulty of maintaining order reduced to a minimum.

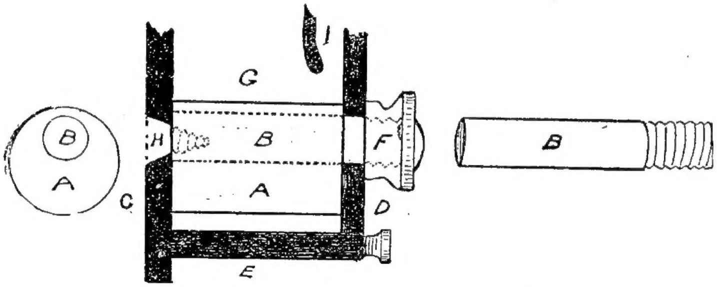
If I have not exhausted my reader's patience, I am afraid the space kindly placed at my disposal has been strained, but I should like to add one other condition nearly forgotton amongst the numerous "points." Don't alarm your audience by anything in your management of the apparatus, whether single, double, or triple, calculated to produce any feeling of insecurity—the roaring or hissing of a jet, the popping out of a light, the sudden crash arising from carelessly dropping slides or upsetting appliances may be perfectly understood by the operator, and may forebode no actual harm, but they tend to the discomfort of the company and are to be scrupulously avoided if you would study carefully "How to Get, Please, and Retain an Audience."

——:o:——

Registering Lanterns

By F. Stoffell.

Ever since the evening in which I heard Mr. C. G. Norton's admirable paper at the Lantern Society in connection with management and registering of lanterns, I have been busy on my lanterns, improving and renovating them. Mr. Norton spoke of his runners as being essential to the registering of a lantern, they are without doubt very useful for the purpose, but as far as I can ascertain, this arrangement for templates is at best a plan far from satisfactory. What is wanted in a bi-unial or triple lantern is an easy means of raising or lowering at one or both ends of the stages in which the slides are placed. This raising is usually effected by a base which rests upon the stage pins, and which is fitted with screws for raising or lowering. All this means complication, which is a matter to be kept as simple as possible.



It is my intention during the summer, to make new fronts for my apparatus, and when doing so intend adopting a totally different method to those in use for registration, and this method I shall now, with the aid of a drawing, describe.

As I am to make a new front I intend to fashion it slightly different to those of a commercial nature, at the plates.

The plate C is that which is attached to the lantern body.

The front plate D is secured to its fellow C, by means of the bar E at the lower edge, the stage where the slides are placed being represented at G.

In ordinary lanterns a stationery pin placed at B, forms the support for the adjustable stage. I also intend to use a pin at the same place, but for supporting an eccentric, such as shown in the sectional sketch, A being the eccentric, and B a hole into which the pin B fits.

The pin B being in position with the eccentric shipped on it, it will be obvious that a turn of the nut F will lock the eccentric in any position in which it may be placed. At the other end of the stage another similar eccentric is placed. It will thus be obvious that if a flat piece of brass or runner be placed so as to lie upon these supports, it can be readily and securely adjusted at any desired height by undoing the nut F, and giving A a slight turn, this motion can be given at both ends of the stage. By this means it will be a simple matter to put two or more lanterns in registration with quickness and certainty; for there is no motion like an eccentric for rapidly obtaining any particular level or inclination. The end of the spring plate which keeps the slide close up to the condenser is shown at I.

——:o:——

How to Enlarge.

Continued.

By J. S. Spencer.

Development.

Successful development depends as in other photographic pictures on a variety of conditions, but given good materials, the exposure is the ruling factor; all the same a correct exposure may be spoilt by injudicious development, or a badly timed exposure may be partially balanced by skilled use of the developer. However, for the best results there must be a proper exposure to work upon. Paper and plate makers generally supply a formula for development they consider most suitable for their productions, and it may be so in their hands; we know from experience one operator will succeed with a formula with which another will entirely fail to get a presentable picture, and *vice versa*. For paper the most generally used is ferrous oxalate, apportioned in strength to the kind of result aimed at. The chief drawback to it is yellow stains, produced by the imperfect removal of the iron salt before washing and fixing. Provided all the processes are carefully performed most excellent results are obtained with the ferrous oxalate. No doubt, *thorough* washing in every part of the process where washing is required is of superlative importance with respect both to permanence and colour. Hydrokinone is another excellent developing agent for bromide paper prints, and with this there is no yellowing, the colour produced is colder and blacker than with iron, and does not generally meet with as great approval. The following conditions apply to all kinds of development: Firstly, the suitable temperature of the solutions, never using them very cold or very hot; a temperature of between 60 and 70 degrees is best. A low temperature will retard development, and a too high one producer irregularities. Secondly, to always *use plenty of solutions*, it is a mistaken economy to work with as little as possible, besides being a fruitful source of stains and irregular development. An operator continually engaged on this particular work may take liberties with these rules and get on all right, but to those less practical such deviation would probably land them in a hopeless mess. The treatment of a finished bromide image with a solution of mercuric chloride will effect considerable alteration in the colour, it may possibly nearly discharge it, but if after washing to remove the murcuric salt it is placed in an ammonia bath, the image will gain considerable force. There is, however, no reliance to be placed on the permanency of the picture after this treatment, as with different makes of paper this result varies, still on occasion it may be found useful.

Finishing.

Nothing is better than fresh starch paste for mounting any print with a white or delicately tinted margin. It is so cleanly, a little mountant getting accidently on the face of the picture leaves no unsightly mark. Finger marks and slight soils can be easily removed by rubbing with a pad of white blotting paper, this is far preferable to India-rubber eraser, and will remove the dirt without in any way injuring the surface. The starch paste should be strained whilst hot through two or three thicknesses of muslin, and after pasting the back of the print thoroughly over it should be left five minutes or so exposed before laying it on the mount, the position being indicated by a couple of pencil marks previously made; one edge of paper is allowed to come into contact with the mount accurately with regard to the mark, then slowly lowered, avoiding air bubbles much as possible, a sheet of smooth paper is then laid over it, and it is well rubbed down into perfect contact and set in a warm room to dry.

——:o:——

On the Invention of Dissolving Views.

By Edmund H. Wilkie.

(Of the late Royal Polytechnic Institution.)

In an article headed "Lantern Effects without a Lantern," in March number, I find a few queries put forward by the writer which I can I think answer to his satisfaction, and I do so the more readily on the present occasion as I think the matter will be of general interest to all acquainted with genuine dioramic dissolving view exhibitions.

In order that Mr. Harrison may be possessed of the fact that he is not dealing with a tyro, or with one who is not thoroughly conversant with the matter upon which he is writing, I may preface my information by remarking that for many years I held shares in the late Royal Polytechnic Institution, and am therefore well acquainted with the business details of the company; that for ten years I travelled for them as popular lecturer with dissolving views, besides delivering hundreds of lectures in their large theatre, and at the present time, although incapacitated by ill-health from following the lecturing profession, possess what I believe to be the finest collection of apparatus and painted views in the kingdom. All the great mass of views accumulated by the Polytechnic has passed through my hands, and I mention these incidents to show Mr. Harrison that he may put faith in the facts I shall presently give him, as his former informants do not appear to have known anything about the matter, and this possibility has made him sceptical, at least, it would have had that effect upon my mind.

In the first place, dissolving views, by which I mean the dissolution of one picture into another by the aid of two lanterns, were the joint invention of two gentlemen, Messrs. Childe and Hill, who were in partnership at the time. Mr. Childe is since dead. No one

NORTON'S

TEMPLATES for testing Lenses and securing coincidence of disks ... each 2/3
RUNNERS (adjustable) for Lantern Stages for perfect registration ... ... each 3/3
LANTERN LENSES, English make 15/-
In pairs or threes of exact focus, with Interchangeable Tubes in Rack fronts each 30/-
New Pattern Slide Cabinet 5/6
SOFT LIMES ... ... ,, ,, 1/2
BINDING for Slides, THRICE Coated with pure Gum ... ... 250 for 1/2
MOUNTS for Slides, per box of 12 Colours
RAPID RECTILINEAR LENSES, Best English, with Caps, Stops, Flange, &c.
¼ plate, 12/6 ; ½ plate, 16/6 ; Whole plate, 22/6

LANTERNS ADJUSTED and made to REGISTER Correctly.
ENTERTAINMENTS PROVIDED.
EFFECT SLIDES AND LANTERNS ON HIRE.
All Goods Warranted PERFECT.
TERMS—Cash only. Discount to Dealers.
All Goods Delivered FREE.

C. GOODWIN NORTON,
38, MARCHMONT ST., LONDON, W.C.

"LOTHIAN" SPECIALITIES.

The "Lothian" Optical Lantern.

Unique design, for oil or limelight

THE "TODD-FORRET" MAGNESIUM FLASH-LAMP (Patent).
Pronounced by experts to be the best in the market. Most suitable for home portraiture. Unexcelled for interiors. Improved pattern 13/- post free.

The "Lothian" Etching Plates for making Diagramatic Lantern Slides, brown, blue, and obscured, Now used by many science lecturers and others. Write for particulars.

CATALOGUE—NEW EDITION.

OPTICAL LANTERNS & SLIDES.

NEW SETS—Homes and Haunts of Robert Burns, 134 ; France to Buda Pesth, 50 ; Trip Round the World, 100 , 500 Bible Subjects. New Comic Sets. New Life Model Sets. All Lantern Requisites kept in Stock.

Send for Catalogue.
50 SLIDES LOANED FOR 2/-

W. B. MITCHELL & CO.,
191, HOPE STREET, GLASGOW

LAWSON PATENT SATURATOR AND LIMELIGHT.

Direct from Patentee. Price 50/-

W. LAWSON,
Newton-le-Willows, Lancashire.

— SPECIAL. —

Grand Optical Lanterns, 4in. Compound Condensers, and 3-wick Lamps, 23s. 6d., or with 4-wick Lamps, 25s. Splendidly Coloured, 3¼in. × 3¼in. Slides, in Sets of 12, price 3s. per Set, or 4 Sets for 11s. Full Size Changing Comic Slipping Slides, in Mahogany Frames, 7d. each, or 6s. 6d. doz. Lever Action Slides from 1s. 6d. each. Rackwork (including Chromatropes), 2s. 6d. each. Best Quality Double Motion Chromatropes, 4s. 3d. ; Extra Designs, 9d., 1s., 2s., 3s. per pair. Reading Lamps with Flash Shutter, Shewing Red Light Signal, 2s. 6d. The New "Lightning" Double Carrier Frame, 1s. 3d. *New Catalogue Gratis and Post Free.*

ROBERT H. CLARK, Wholesale Optician, Royston, Herts.

CRYSTAL PALACE

NATIONAL PHOTOGRAPHIC EXHIBITION.

APRIL 10th to 29th, 1893.

ALCOVES AND SCREENS will be placed in the North Nave. A Gold Medal will be Awarded for the best Alcove, and a Silver Medal for the best complete Screen.

All Classes for Photographs open to Professional and Non-Professional Photographers. A special Class will be devoted to the work of Lady Photographers, and a Silver Medal will be awarded to the best Exhibit.

THE NATIONAL CHALLENGE CUP for the best Collective Exhibit by a recognised Photographic Society will be offered for competition. Diplomas will also be award by the judges.

A Special Section will be devoted to Photographs which have received 1st and 2nd Awards at any recognised Photographic Exhibition.

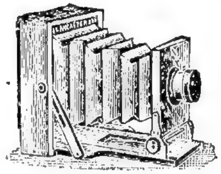
The Theatre will be used for the projection on the Large Screen of Lantern Slides, competing and on loan.

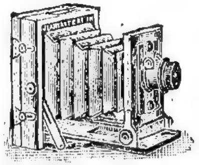
The South Nave will be reserved for Photographic Apparatus, Materials, Demonstrations in Practical Photography, Photo-Mechanical Processs, &c.

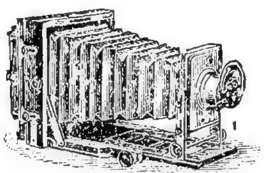
All Correspondence and Enquiries must be Addressed to **Henshaw Russell,** Manager, Crystal Palace, London, S.E.

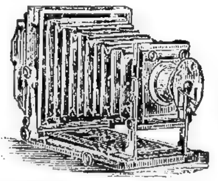
JAMES LANCASTER & SON, Opticians, BIRMINGHAM.

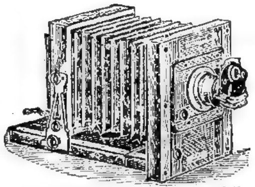
The Largest Makers of Photographic Apparatus in the World. Upwards of 75,000 Cameras Sold.

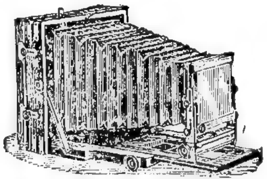

The 1891 "Le Merveilleux" (Patent)
¼-pl 21/- ½-pl 42/- 1-pl 63/-

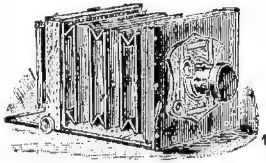

The 1891 "Le Meritoire" (Patent).
¼-pl 31/6 ½-pl 63/- 1-pl 90/-

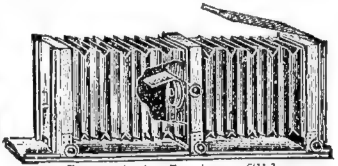

The 1891 'Instantograph" (Patent).
¼-pl 42/- ½-pl 84/- 1-pl 126/-

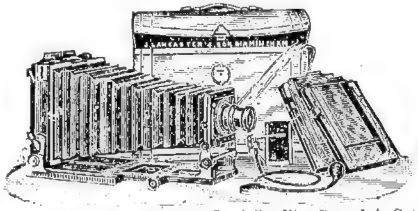

The 1891 "Special Instantograph" (Patent). Brass-bound.
¼-pl 50/- ½-pl 100/- 1-pl 150/-

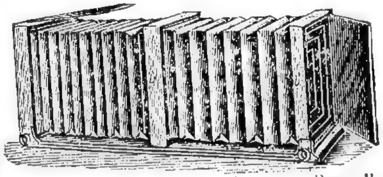

The 1891 "International" (Patent).
¼-pl 50/- ½-pl 100/- 1-pl 150/-

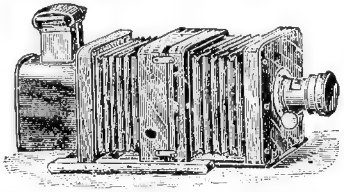

The 1891 "Special" Camera (Patent). No Lens or Stand.
¼-pl 50/- ½-pl 80/- 1-pl 105/-.


The 1891 "Ladies'" Camera (Patent).
¼-pl 35/- ½-pl 60/- 1-pl 85/-


Lancaster's Lantern Slide "Multum-in-Parvo."
Camera, Slide, Lens and Shutter. ¼-pl 21/-.


The 1891 "Extra Special First Quality Complete Set
¼-pl 168/- ½-pl 252/- 1-pl 336/-


Lancaster's Combination "Multum-in-Parvo."
For Enlarging and Reducing.
¼-pl 35/- 10 x 8 42/- 12 x 10 50/- 15 x 12 63/-
18 x 16 105/- 24 x 20 126/-


The "Lancaster" First Quality Enlarging Lantern.
With 6in. Condensers ... 1st quality 126/-
" 7in. " ... " 168/-
" 8in. " ... " 189/-
" 9in. " ... " 210/-
" 10in. ... " 252/-

FIFTIETH THOUSAND.

"HOW TO BE A SUCCESSFUL AMATEUR PHOTOGRAPHER."

By W. J. LANCASTER, F.C.S., etc.

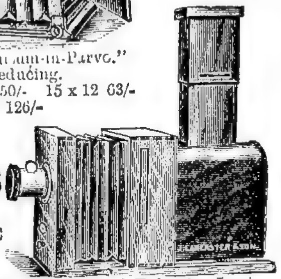
POST FREE, ONE SHILLING.

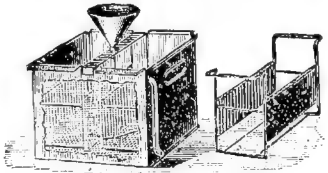
Fully Illustrated and Descriptive Catalogue of

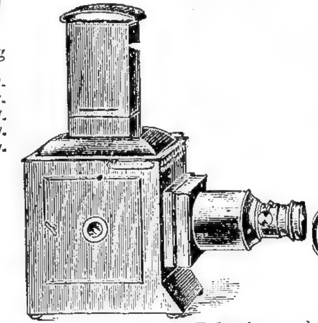
PHOTOGRAPHIC APPARATUS

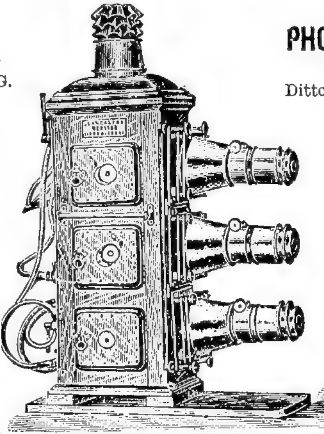
POST FREE, FOURPENCE.

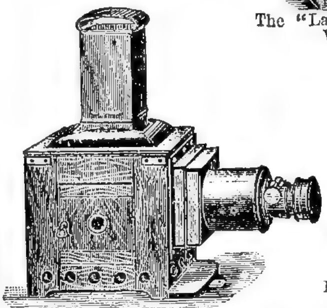
Ditto of LANTERNS, etc., THREEPENCE

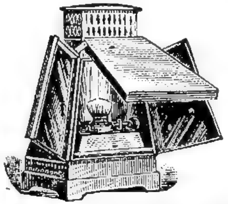

The "Lancaster' Enlarging Lantern.
With 5in. Condensers, etc. 63/-
" 6in. " 84/-


Lancaster's "Hicro" Washer.
For Negatives or Prints.
For 1 doz. ¼-pl 5/- ½-pl 7/6 1-pl 10/6


Lancaster's Amateur Enlarging and Home Lantern.
With 4in. Condensers, Achromatic Front 3-Wick Lamp etc. .. 42/-


Lancaster's First Quality Tri-unial Lantern.
Price Complete ... £17 10s.
Cheaper Form ... £8 8s.


The "Excelsior" Lantern
With 4in. Condensers. Best Achro. Front, 4-wick Lamp, etc. .. 63/-


Lancaster's New "Rubralux" Lamp. (Patent).
Can be used as a White, Yellow, Ruby, or Deep Ruby Light 7/6
Larger Lamp, 10/6

besides these two had any finger in the pie. Before their time dissolving views were unknown.

Professor Pepper was in no sense a designer or exhibitor of views or effects. He came first to the Polytechnic as Professor of Chemistry, and being a splendid lecturer, and what is quite as important, a good business man, was eventually elected managing-director, and during his term of office produced many very successful illusions. In mentioning that dissolving views were first brought to London by an Italian, Mr. Harrison is probably thinking of the German, named Phillipstall, who caused a great deal of excitement by his phantasmagoria effects of apparitions. This he did with one lantern. Dissolving views were first exhibited, as I have said, by Messrs. Childe and Hill, and under their directions four large lanterns having ten inch condensers were constructed by Collins for the Polytechnic and exhibited with great success up to the closing of the Institution in September, 1881. Two of these large lanterns are in my possession now.

Mr. W. R. Hill was the pupil of Mr. Childe, but he excelled his master in every way; the very artistic pictures and remarkable mechanical effects which he produced for us at the Institution were greatly enjoyed by the public for about thirty years. That there may be no misconception let me explain the method of producing one of these entertainments. The directors first decided upon a subject, which was then sketched out in skeleton form to divide the stage and optical portions. The names of the views were then given to Mr. Hill, whose business it became to design, construct, and paint pictures and effects of any appropriate character. When the views were ready, Mr. Hill explained his ideas to Mr. J. Stone, the principal operator, who then registered them and prepared them for rehearsal. Some of the effects were so elaborate that for their perfect exhibition six of these great lanterns were in use at one and the same time. The Incantation Scene in the entertainment founded on Weber's opera "Der Freischutz," needed six lanterns and four operators. These matters I speak of from my own knowledge, as I had the pleasure of the personal acquaintance of all those gentlemen whose names I have mentioned, besides many others, including Dr. Croft and Mr. J. L. King, now deceased, but whose names will be familiar to those who frequented the old Polytechnic.

With regard to dissolvers Mr. Harrison does not state if the information he requires relates to mechanical dissolvers placed in front of the objective or to gas dissolvers. Respecting the former, almost every exhibitor used one shaped according to his own fancy, and as to gas dissolvers the idea originated with Mr. S. Highley, an optician, at that time in Great Portland Street, but whom I have lost sight of lately, and the dissolving tap of the present time has gradually evolved itself from his idea. It is like the sewing machine, which was the original invention of Elias Howe. Elias has been so much improved upon that the poor fellow is quite forgotten now. As a final word, let me reiterate the fact that dissolving views were the joint invention of Messrs. Childe and Hill, and to the ingenuity of the latter gentleman we owe the majority of those beautiful effects which we now have in our dissolving view exhibitions. Should any further information be found necessary I shall be only too pleased to give it.

—:o:—

A New Name for a Magic Lantern.

By W. C. S.

For several years the instrument by which transparencies have been projected upon a screen, has been known to both young and old as a magic lantern. Under this name everyone knows just what is meant, but as in these present days of knowledge there is nothing of a magic character about it, it would only be in keeping with the advance of education if a new word were found or coined by which we could speak of this popular instrument.

Any change of name would take at least ten years if not more to become universally adopted. If, however, a change is required the sooner such is commenced the better.

The Americans have adopted the name "Stereopticon" instead of the name magic lantern, but whereas only a few (comparatively) understand the former word, it has led to complications, for in American advertisements we read of So-and-so's "stereopticon magic lanterns," so hard does it seem to drop the well known name.

Some few have termed it "optical lantern," but this would seem worse than ever, although it sounds a little more scientific. Every lantern provided with a reflector or bull's eye and a light is an optical lantern, and the name would equally apply to a policeman's lantern or a bicycle lamp.

Such a name as "projecting lantern" is equally out of place, and I would suggest, with the Editor's permission, that the readers be invited to express their opinions upon the subject, and to discuss this matter in the hope that a name of a more suitable nature may be introduced than that which is in present use for the useful instrument at present known as magic lantern.

[We shall be pleased to hear the opinions of our readers upon this subject.—EDITOR.]

—:o:—

Transparency Making for the Lantern.

By ROBT. FAUNCE.

To make a transparency for the lantern that will show bright and effectively on the screen, and yet be full of detail, is more difficult than one would at first sight imagine. A transparency that would be excellent for many other purposes, may fail to give satisfaction in the lantern. This fact has instigated manufacturers to turn their attention to the matter and supply special lantern plates that will, with ordinary treatment, provide images suitable for it. Even with such plates, success does not always reward the amateur who has often but a foggy idea of the kind of transparency really required.

Lantern plates are somewhat less sensitive than other kinds; the chief idea in their manufacture being to prevent flatness by over exposure and blurring, which is very liable to occur with more rapid plates, and is fatal to good effect. It must not be thought when it is said to be necessary to have clear glass in the shadows (a phrase which is at best somewhat misleading), that an under exposed picture is indicated. The term clear glass means that the image in its very deepest shadows, which really occupy but a very small portion of the plate, must be free from veil, perhaps about as much as the very highest light. In other parts detail should be everywhere made out, a plate that is given to blurring and halation by the strong lights overlaping and encroaching on the adjacent shadows, is a plate to be avoided, and with most rapid plates there is an inclination in this direction; it may not perhaps be noticed unless in some very pronounced light such as a window in an interior, or strong light amongst the branches of trees, where it is seen to obliterate the thin branches in relief against it. This same blurring, however, may be present, although in a less conspicious manner, all over the plate, destroying or damaging what would otherwise be a clear image. For other negatives and positives this kind of irradiation is not of very great importance, but no doubt all images would be better without it.

For instance, it gives a rather false idea of exposure, and when this is too brief, irradiation supplies the idea of sufficiency, it must be quite absent in all good lantern slides, and this is the condition termed clearness, provided there is freedom from fog from other causes.

In examining a lantern slide, it is best to lay it face down, in close contact with smooth white paper, much detail will be then apparent that is quite invisible by transmitted light, and the clearness of the image should be such, that in just the deepest shadows there should be but slight difference in the colour to the uncovered paper on which it lies. The different gradation can be observed in this manner better than in any other, but the density cannot. To estimate this, transmitted light must be used, and if a light approximating somewhat in colour and strength, to that it is intended to exhibit them by, so much the better; a fairer estimate of their quality can be made. The differences required in density must be judged according to whether they are intended for exhibition by oil or mixed gas lights. A perfectly good positive or rather one that shows to best advantage with the lime light, would look thick and over dense by the light of an oil lamp, and *vice versa*, so in preparing the slides the means to be used in showing them must be borne in mind. When making transparencies, in our anxiety not to over-exposure, we must avoid the other extreme under-exposure, which I think of the two is a worse fault. Thousands of slides produced commercially are under exposed, in fact the majority of those sold would be better for more exposure. The manufacturers, considering the much greater proportions of oil lamps used to gas, err on the side of thinness and clearness, for there is no doubt the public like the bright clear pictures in preference to the thick dull ones. However, this paper is not written exactly *pro bono publico*, but rather for those who estimate a lantern photographic slide for its real excellence rather than its meretricious attractiveness, at the same time the general public are able to appreciate a good slide when they see it, which will generally command applause as it appears on the screen, in the company of others less meritorious.

The densest part of a lantern slide should never be quite opaque, unless, in tiny points of the very highest light. This is a rule that applies to every other photograph with half tone, but in the case of lantern slides very much less density all through is required, than in other kinds. If we lay them face down on a sheet of printed matter, the letterpress should be visible through all but the very densest parts, for a very much less obstructive film is able to cut off the light of a lantern, that would be insufficient to print or reproduce from. With regard to the method of production, they may either be made by contact printing or in the camera. Each

G. W. WILSON & CO.,

2, ST SWITHIN STREET, ABERDEEN.

Will be glad to send post free, their

NEW CATALOGUE OF LANTERN SLIDES.

SEND FOR SAMPLES OF

WORMALD'S

Mathematically, Centrally, Truly, and Smoothly Cut

STEREOSCOPIC AND LANTERN SLIDE MASKS.

AND BINDING STRIPS

WORMALD & CO., Sutton, Surrey.

Send for Prospectus of Wormald's Lantern Slide Printing Frame, and other Novelties

---

DARLINGTON'S HAND-BOOKS TO NORTH WALES

With Maps by John Bartholomew, F.R.G.S., and Messrs. W. & A. K. Johnston.

Crown 8vo., Extensively Illustrated. Full Lists on Application.

DARLINGTON'S NATURALIST SERIES.

The Birds, Wild Flowers, Ferns, Mosses & Grasses of N. Wales.

By Ralph Darlington, F.R.G.S., F.R.B.S., F.R.H.S.

Full Lists and Press Opinions on Application.

LLANGOLLEN: R. DARLINGTON & CO.

LONDON: SUTTON, DROWLEY & CO.: W. H. SMITH & SON,
Railway Bookstalls and all Booksellers.

OPTICAL LANTERN LECTURES,

By RALPH DARLINGTON, F.R.G.S.

My Travels in Egypt and Experiences on the Nile—150 Slides.
My Travels in Greece, Turkey and Asia Minor—100 Slides.
Across North Africa—90 Slides.
Pompeii: Past and Present, and the Bay of Naples—80 Slides
The Sights of Rome—50 Slides.
Picturesque Italy: Past and Present—100 Slides.

Prospectuses and Terms for Lectures this winter on Application.

R. DARLINGTON, Greenheys, Llangollen, North Wales.

WET COLLODION.

Lantern Slides from Engravings, Photos, or Negatives.

Terms on application.

JAMES W. GARBUTT,

Lantern Slide Maker and Colourist,
10, Edinburgh Grove, Upper Armley, Leeds.

Lanternist to the Gilchrist Lectures by Appointment of the Trustees.

H. HUGHES AND SON,

LANTERN SEASON, 1891 & 1892.

All New Slides and Apparatus Now Ready.

OUR SPECIAL OPTICAL LANTERN 35 SHILLINGS.

Hire Terms Greatly Reduced.

NEW ILLUSTRATED CATALOGUE POST FREE.

59, Fenchurch Street, London, E.C.

TO THE TRADE & ALL INTERESTED IN THE PRODUCTION OF OPTICAL LANTERN SLIDES.

FRANK F. WEEKS, Recognised Specialist,

Artist-Draughtsman, Inventor, and Side Designer to all the Principal Slide Makers, Publishers, Societies, Lecturers, Clergy, &c., Original Artistic Hand-drawn Designs, expressly prepared for producing Photographic Optical Lantern Slides of every known form, Process Blocks for Book Illustrations, &c., accurately depicting subjects of any nationality or period, up to date.

N.B.—"F. F. W. makes the designs, his clients photograph them, producing their own negatives and slides therefrom *ad libitum.*"

Lecture Sets, Service of Song, Tales, Poems, Hymns, Songs, Recitations, Comic Stories and Subjects, Curtains, Mottoes, &c., Mechanical and Dissolving View Effect Slides, &c., &c. For Full Particulars and Terms, send for my **SPECIAL CIRCULAR**, Latest Edition, **ONE PENNY**, Post Free. No P.C.

21, THORPE ROAD, FOREST GATE, LONDON, E. ESTABLISHED 1875. **BOOK EARLY.**

SPECIMENS of my work ON VIEW Crystal Palace Photo Exhibition.

THOMAS'S

"PALL MALL"

LANTERN PLATES

Are UNAPPROACHED and UNAPPROACHABLE

By any other Brand, in spite of the Ceaseless Efforts of Numerous Imitators.

These are merely demonstrating the accuracy of the truism: "Imitation is the sincerest form of flattery.'

THE PLATES COMBINE, WITH THE CHROMATIC APTITUDE OF SILVER CHLORIDE, THE BRILLIANCY OF IODIDE AND THE DELICACY OF BROMIDE.

They consist of the most perfect Emulsion on the thinnest selected glass, at the original price:—

$3\frac{1}{4} \times 3\frac{1}{4}$ in. and $8\frac{1}{2} \times 8\frac{1}{2}$ cm., 1/- per doz.

TO BE OBTAINED OF ALL DEALERS, OR AT OUR CENTRAL DEPOT.

R. W. THOMAS & CO., Ltd., 10, Pall Mall, LONDON, S.W.

TELEGRAMS, "RUHTRA, LONDON." TELEPHONE NOS, 35037, 9365.

CHAD

Here we give you two pages of
If you wish to know more about our H

It is all very well to examine and perhaps admire a Magazine Camera at a dealer's shop or even at home, but practical work in "the field" is the only safe way to test it. Imagine carrying a Magazine Camera for a day over a dusty road; and then imagine the bother with sheathes, or paper-backed plates. But that is not all.

Did you ever know a cyclist to be satisfied with his "Machine" for more than a year? My experience of cyclists is, that they are always changing, and it is quite amusing to hear their arguments in favour of every new machine they get. Well, it is just about the same with Hand Camera men—or worse. I never knew a man yet who was satisfied with a Magazine Hand Camera for more than a season Of course, they were delighted when they got their last "latest novelty," and sang its praises for a week or two; but something goes wrong, and they wish to part with it to get another of a different pattern. Now how is it the same thing does not apply in the case of ordinary Cameras? Why, because there is no bother with magazines or trouble with unnecessary complications. When a man buys a good Half-plate or a Whole-plate Camera he is usually satisfied for years, his only trouble then is the weight; but with one of my Patent Landscape Cameras he has no trouble at all, for he knows that he has the lightest practical Camera on earth. (For particulars see Catalogue.)

My Hand Camera is provided with **Dark Slides**, because they are the most practical of all plate holders. Originally Barnett's Patent Dark Slides were supplied with the Practical Hand Camera, but for small sizes, such as ¼-plate, **Scott's Patent Dark Slide** posseses some advantages, especially for Hand Cameras, so frequently used by beginners. It is now impossible for even an experienced person to light-fog a plate by accident, as by an ingenious spring arrangement the aperture for the shutter of the Dark Slide is automatically closed on the removal of the shutter.

The Scott Dark Slides are in many respects like Barnett's; they are single, each containing one plate—a great advantage, and prevents the possibility of exposing the same plate twice as with double slides. They occupy the same space as Barnett's and fit the same grooves, but they are a little lighter (1 doz. ¼-plate size weigh 1¼ lbs., or 1¾ ozs. each).

There is no limit to the number of plates that may be exposed, for these slides are inexpensive, and if we know beforehand, as we often do, that we are not likely to require more than three or four plates, say on a walk on the pier or promenade, we can go out with as many as we like, say two or three, four or five, or half-a-dozen in the pocket, or twenty if we like, and there is NO FEAR OF A PLATE "STICKING" HALF WAY" as in Magazine Cameras, and no bother with sheathes or paper-backed plates. *Neat little slide cases are provided when necessary See price List, page 8.)* **Films** or **Plates** can be used with equal advantage in these Dark Slides. (*See Film Carriers, page 8.*)

My Camera is **not a fixed focus** instrument, because a fixed focus is not the best, as a very elementary study of photographic optics will show. It is all very well for some tradesmen to say that with "their fixed focus apparatus all objects at 9 feet and beyond are in focus:" of course, this is quite possible under certain conditions, but the assertion is apt to mislead. It is a fact that the shorter the focus of the lens (which implies the smaller the picture), or the smaller the diaphragm

The Optical Magic Lantern Journal, April 1st, 1893.

(which involves a longer exposure), the easier it would be to accomplish what has been stated. Opticians have done a good deal, but they cannot do impossibilities.

Here are a few figures which may be taken as the best that can be done.

A 3-inch focus lens working at F 10 can be made to give good definition of objects at 8 or 9 feet and beyond—but a 3-in. focus lens working at F 10 would not cover a ¼-plate sufficiently well. Now a 4-inch lens working at F 10, would require at least 14 feet to give the same definition, and even this is considered too short in focus for a ¼-plate; so that we must now consider a 5-inch focus lens. The working at F 10 would not define objects at less than 20 feet and beyond, though if we stop it down in the diaphragms to F 15 we may get the same definition at 14 or 15 feet; and to obtain the same sharpness at 9 feet and beyond we must stop down the lens to F 25, and this would be to slow for Hand Camera Work.

Thus it will be seen that a 5-inch focus lens—which is about as short as would be useful for a ¼-plate, embracing an angle of 44°—if used as a "fixed focus" for objects at 20 feet and beyond, no larger stop than F 10 could be used, and if we wished to take nearer objects, say a country market group, or children at play, or hundreds of other subjects at say 14 or 15 feet, the picture would not be sharp, and, as already stated, to be able to take objects so near as 14 or 15 feet with a fixed-focus lens, it must be *adjusted for that distance* and stopped down to F 15, or else objects beyond 15 feet will be out of focus, and this reducing the aperture for near objects is the *very opposite* to that which is required; for it is well known the nearer we approach an object the longer must be the exposure, or the larger must be the stop for the same exposure that would be necessary for more distant objects; then, of course, for near groups, figure subjects, &c., we require a large stop, and are generally willing to sacrifice sharpness in the distant objects.

Therefore it now becomes manifest that by employing an adjustable **focussing instrument** we could leave the stop at F 10, or even increase it to F 8, and by a slight adjustment of the focus, obtain results which with a fixed-focus instrument would be quite impossible.

The **means of focussing** by rack and pinion and the method of using it **is novel**. The focussing button attached to the pinion (shown in Fig. 3, under the strap handle) is about the size of an ordinary overcoat button, and is provided with a heart shape aperture forming a little pointer; through this aperture may be seen a white ivorine tablet or disc, on which is marked an index for the various distances to suit the particular lens in use; **the Camera being available for any suitable lens of from 3 to 5½ in. back focus.**

The user should make his own index, which he can do in three minutes, by means of the focussing screen supplied, afterwards to be described; for assuming that I do not supply the lens, it is quite impossible to provide an index—not knowing the exact focus. On the other hand, assuming that the lens is supplied with the camera, and the index marked in feet or yards, I venture to say that very few Photographers will use it correctly; not one man in half-a-dozen can estimate distances

HAVE YOU USED SOLIO?

The Most Popular Printing-out Paper of the Age.

A PRACTICAL SUBSTITUTE FOR ALBUMEN PAPER.

CLEAR WHITES.

EXQUISITE TONES.

HIGH GLOSS.

SOLIO will not curl, crack or blister; requires no special handling, and can be **used with ordinary Negatives.** It does not fix out, and requires **no washing** before toning and fixing. **Free from the Defects** of Collodion or Gelatine Papers. Solio does not stain Negatives.

EASTMAN PHOTOGRAPHIC MATERIALS COMPANY, LTD.,

115, OXFORD STREET, LONDON, W.

PARIS: 4, PLACE VENDOME. NICE: PLACE GRIMALDI,

ROCHESTER, N.Y., U.S.A. THE EASTMAN KODAK CO.

plan has its advocates, and both have their drawbacks. When the negative is on a perfectly flat support, like patent plate, and the positive on the same kind of glass, there is no better plan than contact printing, or, if either one or the other is on a flexible support so that their surfaces may be brought into good contact, this method of printing is without reproach. But as a rule the glass is far from flat, this being the case no amount of care will produce perfect results, some part or the other of the picture will be more or less blurred and indistinct, making the lantern slide worthless. When the camera is used for the work, these irregularities are of no consequence whatever, the chief care is to focus the picture sharply, and judge the exposure rightly. Artificial light being used, the exposure is so under control that it may be calculated to a nicety, once get it right and any number of slides may be made of the utmost uniformity. To obtain the best results with the camera, every particle of light must be shut off from the plate, excepting that passing through the negative to form the image, the neglect of this precaution will often spoil, or at any rate injure the brilliancy of the positive. In contact printing an opaque mask should be fitted over the negative, quite covering its edges, as the light radiated from the rough edges of the plate will cause a defect on the margin of the positive of sometimes half or three quarters of an inch in width, according as it is presented to the light.

In the development of lantern slides a well restrained developer is required. A little bromide is an improvement in nearly all kinds, even if they will work well without it for ordinary pictures. After development and fixing an acid bath of weak hydrochloric, or sulphuric acid and alum, will be found of service in cleaning up the shadows and adding to the brilliancy. The color of the image is purely matter of taste, the length of exposure modifies it to some extent, a long exposure giving warmer tints than a short one.

It will be found that a rapidly developed positive will be several shades warmer than one that takes a considerable time to bring out, if the pyro-ammonia developer is used. The color may, however, be modified in many ways by after treatment with gold, uranium, &c. Mercury will give excellent colours, but for this special purpose is rather doubtful in permancy on account of the heat to which the slides are subjected.

The matter of temperature is not to be overlooked, and I am somewhat sceptical as to the permancy of slides made on gelatine films, if hard worked. My preference is for collodion, which will stand any amount of variation of temperatures with impunity, and be in other respects as good, and even better than gelatine, and for a peculiar delicate clearness owing in a measure to the extreme thinness of the films, unproachable. Gelatine of itself, no matter how free from colour it may be, owing to its very thickness has an appreciable tint, and which in the course of the preparation a slide has to undergo, will in all probability be somewhat added to. I am under the impression that if good collodion bromide lantern plates were in the market, their exceptional qualities would ensure a good sale. Until they are, there are no insuperable difficulties to making them at home, the only special necessity is, that they should be made in an apartment quite free from dust. Nothing is more easy than making the emulsion, for which several good formulæ have been published, and once made will keep almost indefinitely. As to coating the plates, a little is poured on and off like varnishing, a slight rocking motion being given to the plates as they set to equalize the coating, and then they are reared up on their sides to dry, the whole process being completed in a minute or two, and the drying in a very short time, when they can be stored in grooved light tight boxes till required for use.

The greatest drawback to collodio-bromide is its extreme delicacy of surface, in comparison with gelatine. In the old wet plate days as this was a constant condition, it was looked on as a matter of course, and the plates were treated accordingly, but the robust character of the gelatine surface induced a certain carelessness, at least, a lack has of that exceptional care in the treatment of films, that by contrast makes the collodion seem more delicate than it really is. Dust, of all things again, is the greatest enemy to the preparation of dry plates of any kind, giving rise to spots and defects, that are sometimes very difficult to trace to their origin. Given exemption from this, collodio-bromide plates may be prepared with the greatest facility, and the results upon them are beyond question equal to if not the best. With regard to the development of collodio-bromide, it is always preceeded by moistening the film with spirit, in other respects it proceeds on the ordinary lines, and the density is judged by transmitted light, and which is produced by the addition of silver nitrate, to weak pyrogallic and citric acid solutions.

A word or two about skies in lantern slides. In my opinion there is only one satisfactory method of adding them, and that is, by printing them on the cover glass in precisely the same way the landscape is done, and binding the two face to face together. If we attempt to print clouds on the same plate as the landscape the chances are that they do not come in exactly the right place, either overlaying the landscape in part or, not joining up sufficiently well, or they may be too dense or too light for the subject, the chances being rather more than equal that the whole thing is spoiled and will have to be done over again; but with clouds on a separate glass they can be placed to a nicety, and made just the right depth; if they do not turn out exactly right they can be done over again without sacrificing anything else. The cloud negative is sharply focussed on the ground glass and the landscape to which it is to be added held in contact with it, thus the exact and best position for the combination is ascertained. When the cloud positive is dry the landscape to which it is to be added is held with it up to the light and the outline marked on the cloud positive, the part that would cover the landscape is scraped off, and the lower portion of the remaining cloud image dissolved away, with a solution of iodine in cyanide of potassium, applied with a camels hair pencil, and then after washing and drying, is ready to be bound up with the landscape. With a moderate amount of deftness the junction of clouds and land will be as perfect as if they were taken at one exposure. The carbon process lends itself admirably to slide making, but as this process requires the same manipulation for lantern slides as for other prints, I merely refer to it as an excellent process, and worth cultivating more by amateurs than it is, especially in this direction.

——:o:——

Writing and Sketching on the Screen.

Without any slides save a stock of prepared pieces of glass, it is an easy matter to give an audience a pleasurable and instructive entertainment. It is, however, necessary that there be stationed at the lantern, one who can make presentable and quick sketches to illustrate the subject chosen for the lecture.

The sketches can be made to appear upon the screen in process of making, in fact will have the effect of being drawn upon the screen either in black on a white ground, or in white upon a black ground. The latter is, however, best adapted for the purpose, as when tracing the figures the pointer will not intrude itself upon the view.

Each separate sketch or writing requires a separate glass, and a supply of these must be at hand. They are best prepared by holding them one by one over the smoke of a piece of burning camphor, until the glass has received an even and opaque coating.

If one possesses a vertical attachment, the glass plate can be laid upon the vertical condenser, and sketched upon by the operator, who must stand with his back towards the screen, so that the figures when viewed on the screen will appear the right way up.

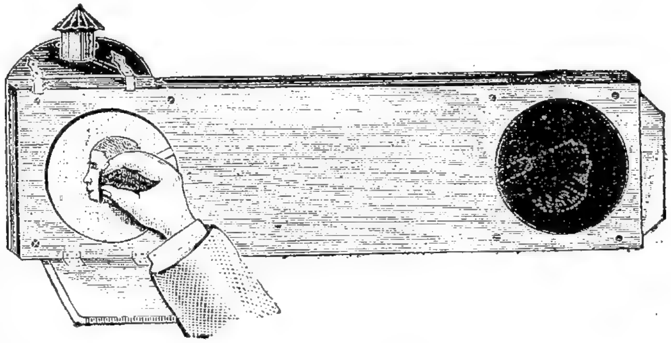


Fig. 1.

Those who do not possess the apparatus just mentioned, can make use of a particular kind of carrier termed the pandiscope. The invention of Mr. W. C. Hughes of Kingsland, N, or of an apparatus called "the drawing master slide," introduced by Messrs. Archer & Sons of Liverpool.

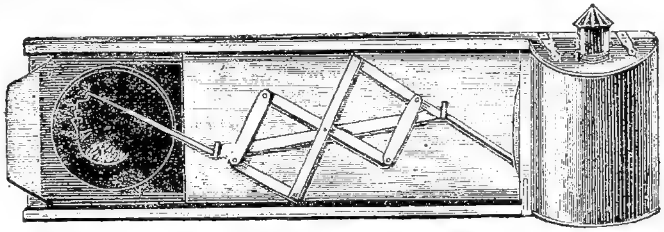


Fig. 2.

The pandiscope is not unlike an elongated carrier furnished at either end with circular openings, one of which can hold the drawing to be reproduced, and the other the coated glass upon which the sketch is reproduced.

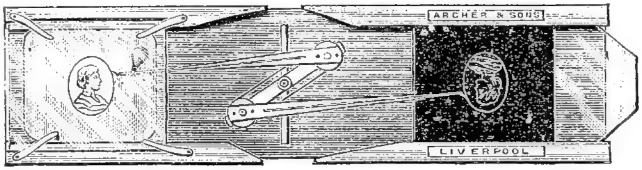


Fig. 3.

The front view (Fig. 1) shows a lantern placed immediately behind the paper glass, or

To ensure high-class results every Triple or Bi-unial should be fitted with practical improvements, as used during our Mr. D. W. Noakes' re-engagement at the Crystal Palace.

THE NOAKES' PATENT TRIPLE DISSOLVER, which not only transforms a Triple Lantern into 3 Biunials at the will of the Operator without anything to screw up, adjust or affix, but admits of dissolving with any possible combination that can be got with 3 Lanterns.

THE NOAKES' PATENT JET CLAMPS, entirely dispensing with trays, and admitting of unbroken ventilation, reduction on size of instrument, and extremely accurate centreing of the radiant.

THE NOAKES' PATENT INTERMEDIATE REGULATORS, admitting of the most accurate balancing of gases, and consequent maximum light.

THE NOAKES' COMPOUND CHAMBER JET (Patent applied for), one of the most powerful jets yet invented, and having proved most successful under severe practical tests, will now be offered.

Also minor improvements, as the Noake's Adjustable Stages, Quick Changing Mounts, Instantaneous Elevator, and accurate interchangeable registration, &c., &c.

All the above improvements are of genuine practical value to the Operator—that is, they assist him to quick, silent and accurate manipulation, as practically demonstrated by our Mr. Noakes and Mr. Locke, in the Opera Theatre, Crystal Palace, with the Lantern at 110 feet from the screen, covering a 25 disc, and accompanying an abbreviated lecture at a rate of over 100 views per hour, including complicated effects.

TO LANTERNISTS.

Those requiring the most Practical Apparatus at a reasonable price, should send for our **New Illustrated Catalogue of Apparatus and Slides,** Upwards of 350 pages, containing **"Practical Instructions to Practical Lanternists by Practical Men," by Messrs. D. W. NOAKES and C. W. LOCK.** Post free 12 stamps,—Apparatus only, 6 stamps. Containing particulars and illustrations of all our recent and Patented Lantern Novelties.

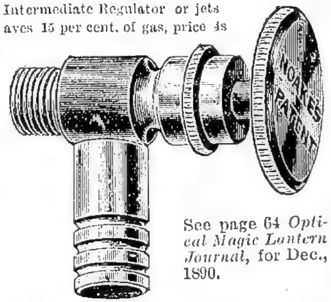
Every improvement in our Apparatus suggested by long personal experience, Mr. D. W. Noakes and Mr. C. W. Lock, two principals of the firm, having personally operated at 5,000 Exhibitions.

Specialties:

High-Class Optical Projection Lenses.
High-Class Optical Lanterns, Cameras, and Enlarging Apparatus, &c.

No LANTERN Complete without NOAKES' Patent INTERMEDIATE REGULATOR.

Intermediate Regulator or jets aves 15 per cent. of gas, price 4s



See page 64 *Optical Magic Lantern Journal*, for Dec., 1890.

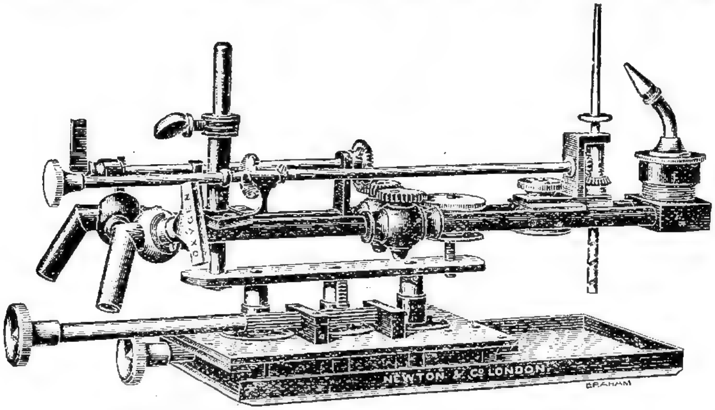
These are selling by hundreds and are highly praised by all users.

This most useful contrivance, when attached to Lime light Jets, stops all noise and roaring when compressed gas is used. Its construction permits the proper quantities of Oxy and Hydrogen to be adjusted in the most accurate and minute manner, thus balancing the gasses, stopping roaring, and getting the most intense light with the minimum quantities of gas.

It is so constructed that it screws into the back of the Jet Cocks in lieu of the usual bends, or can be attached direct to the Jet Tubes.

D. NOAKES & SON,
WHOLESALE AND RETAIL MAKERS
South London Optical Works, Greenwich, London S.E.,
Telephone 8029. Hours 9 till 8, Thursday 9 till 2. "Practical utility without useless elaboration or expensive ornamentation.

NEWTON'S JETS FOR OPTICAL LANTERNS.



New Pattern Adjusting Tray

(For any Jet.)

£2 10s. 0d.

Mixed Oxy-Hydrogen Jet

FITTED WITH "PRINGLE" CUT-OFF

£2 7s. 6d.

Blow-through or House Gas Jet.

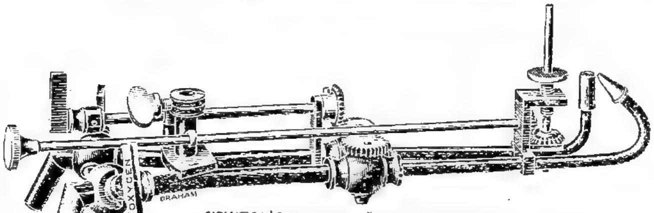
£1 1s. 0d.

Blow-through Jet.

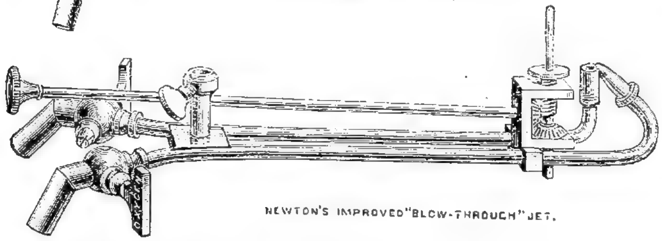
FITTED WITH "PRINGLE" CUT-OFF

Most useful for Photomicrographic work.

£1 16s. 6d.



NEWTON'S IMPROVED "BLOW THROUGH" JET WITH "PRINGLE CUT OFF"



NEWTON'S IMPROVED "BLOW-THROUGH" JET.

NEW SLIDES FOR 1992-93.

Bees and Bee Culture	37	Slides
Histological Series	140	"
Nitric or Nitrous Organisms in Soils ..		
A Photographic Tour Round the World	80	"
Astronomy—"Knowledge" Series ..	48	"
Canada—Up Country Views	25	"
Canadian Pacific Railway	32	"
West Africa	24	"
New Hebrides	60	"
Life History of Wheat	20	"
English History	100	"
Scenes from Shakespeare's Plays ..	85	"
Lord Tennyson's Life, Poems, &c. ..	86	"

New Detailed Illustrated Slide List, 6d.

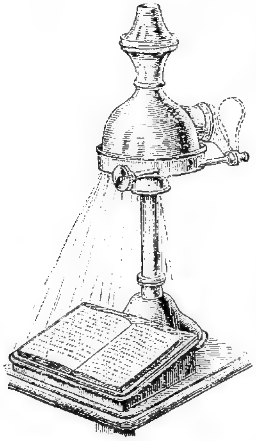
NEWTON & Co., 3, Fleet Street, London.

ARE SOLE MAKERS OF
Patent Refulgent Lamps, Askew's Patent Combination Lantern Box and Stand, Wright's Lantern Microscope,
Wright's Oxy-Hydrogen Jets with "Pringle Cut-off," The "Miniature" Lantern,
The Scientist's Bi-Unial, The Triple Rotating Electric Lantern, Rockcliffe's Patent Slide Register Frames,
Thompson's Patent Curtain Shutter,
Traill Taylor's Triple Condenser, Newton's Patent Rack Lantern Base, Newton's Patent Tubular Slide for Bi-Unial Trays.

THE LATEST NOVELTY OUT IS

THE NEW "LECTURER" CANDLE LAMP

FOR LANTERN READINGS.



In Use.

The very best Lamp yet introduced for Lantern Entertainments.

Gives a **GOOD STEADY LIGHT DIRECT** on to the Lecturer's Paper.
NO FEAR OF FIRE from Benzoline or other Oil.
NO POSSIBILITY OF SPOILING LECTURERS' SHEETS when Travelling.
LIGHT EFFECTUALLY Screened from the Room.

NO TRIMMING REQUIRED. READY FOR USE IN AN INSTANT.

PRICE 15s. Complete. Of all Photographic and Optical Lantern Dealers.

Packed for Travelling.

If cannot obtain, write to the Manufacturers,
BENHAM & FROUD, LD., CHANDOS STREET, LONDON, W.C.
Proprietors of the well-known "Perfection" and "Holiday" Lamps for Amateur Photographers.

other substance upon which the operator makes or traces the sketch by means of the lever and pencil. Whilst Fig. 2 shows the other side, and the system of levers by which a figure made on one plate is reproduced on the other in an inverted form. The leverage contrivance is pivoted at the centre and the ends of the two outside levers terminate, one in a pencil and the other in a fine point which scratches away the soot upon the smoked glass, according to the marks made at the side containing the picture being traced or sketched.

In the Instrument introduced by Messrs. Archer & Sons (Fig. 3), the connections between the tracing arm and the reproducing arm are of a different character, a lever is fastened at its centre so as to swing see-saw fashion. Upon each end of this lever is pivoted an arm, to the end of which is attached a grooved wheel or drum, round which passes a band of leather or cord which causes one arm to be depressed at the time the other is raised, by which means the picture or writing is reproduced in an inverted form in front of the condenser.

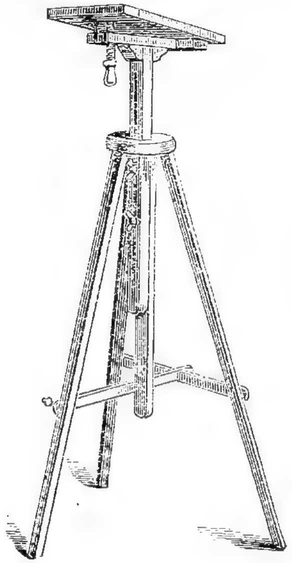
With instruments of this class it is essential that they be carefully made and fitted, and with them after a little practice it is an easy matter to produce tracings of pictures, figures, writing, maps, &c., upon the screen.

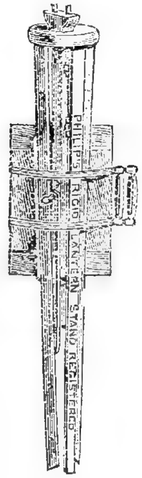
——:o:——

New Apparatus.

Lantern Stand.

A rigid and folding stand is made by Messrs. Geo. Phillip & Son, 32, Fleet Street, E.C., which should meet with favour. A couple of minutes suffices to set it up and clamp the legs in position; when the head, which has a tilting table, can be adjusted to any height, from 4½ft. to 6ft. The illustrations show it opened and packed.

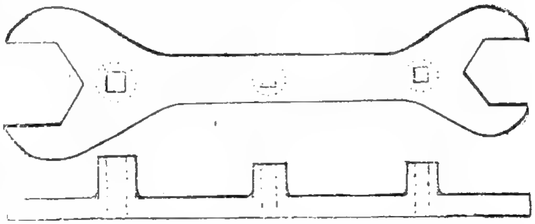



PHILLIP'S RIGID LANTERN STAND REGISTERED

CLOSED

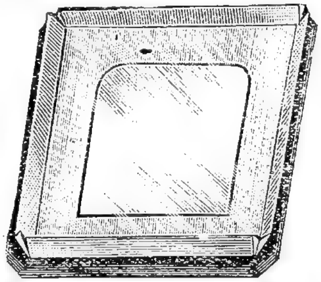
Key and Spanner.

Different makers of cylinder fittings have their own particular size of spindles and nuts, and when one is in the habit of using different makes of cylinders, two or three different sizes of keys and spanners must be kept at hand. Having experienced this difficulty, Mr. C. Goodwin Norton, 38, Marchmont Street, W.C., has invented and patented a rigid key and spanner which will fit any cylinder in use. The larger end of the spanner, shown in the cut, will fit the connection nuts of "Brin's," "Scotch and Irish," and "Manchester" bottles, whilst that at the other end spans those of "Clarkson" or "Newton's." The square perforations for spindles are 2, 3, and 4 Birmingham wire gauge; whilst to secure a hold on those spindles which are covered with a cap, bosses are raised upon the side of the spanner which will fit into these caps, and thus enable the key to obtain a hold upon the spindle.



Mask and Binder.

Several firms have of late been giving their attention to binders and masks in one piece. We have received a box of the latest from the Blackfriars Photographic Co., 1, Surrey Row, S.W. The mat and binder is made of two pieces exactly similar, the mat part being double but cemented together, having the outer edges free. This mask is placed between the slide and cover glass, and the edges of one side gummed to the cover glass, and that of the other to the glass containing the picture. When this is done it is impossible for any particle of dust to enter.



The Lanternists Den. No VII.

By C. E. Rendle.

Notes on Making a Lamp (*Concluded*).

To make the bonnet take a piece of thin flat charcoal iron measuring 12in. by 4½in. (see Fig. 12). With dividers draw lines A A, ½in.; B B, 4½in.; and C C, 5in. from each end; also D D, ½in.; and E E, 1in. from each side edge. With cold chisel cut out centre round lines C C and E E. Next cut away the triangular pieces F F F F. Screw into vice square wood block and bend to right angles at B B; then D D D D should also be bent to right angles, the sides first, and afterwards back and front. The corners must be secured by small copper rivets. Let lines A A be now bent; one to form a round socket or joint, which is intended to swivel on the wire on the one side, while the other must be bent to form a clip on the other side. The joint need not be closed until the finish.

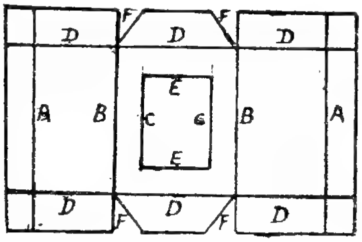


Fig. 12.

Two ½in. strips of iron of the required length can now be fixed at front and back, as at G (Fig. 13); first bending over ⅛in. to right angles. This forms a ledge for glass to rest upon, and four other strips same width and 3in. long, bent nearly double so as to form grooves for glasses to slide into, must be fixed two at front and two and back, so that a piece of micro-glass 3¼in. by 2¼in. will fit easily in. Cut two more pieces of iron 2½in. long by 2in. wide, draw line along each ½in. from edge and bend to 65°. Fix these inside bonnet so as to form air draughts (see dotted line H, Fig. 13); when in position the space between them should be 1in. only, and should stand about ⅝in. above the wick, furthermore, should partly cover wick holders, Nos. 1 and 4, when looking down through top. It may be advantageous to slightly dome them near centre. A piece of perforated zinc must be cut to cover bottom, in the centre of which an opening must be made to allow the holders to come easily through. Now make a frame or flange to receive chimney measuring 2¼in. by 1¾in. A strip of iron ¾in. wide and 8½in. long; draw a line 3/16in. from edge, divide it off from one end. First a line 1¼in., another 3in., another 5¼in., and another 7½in.; now cut with shears down each mark to the side line, and bend it right, when it will be found to form an oblong shape with ½in. for the overlap. Hold in a small hand-vice in position and rivet. Now place in bench-vice so that one of side lines is level with top of vice-jaw, and then tap over the edge flat, and treat the other three sides in like manner. This flange can now be fixed in its position at top of bonnet, the joint of bonnet can be sprung on to side wire, and clamped so as only to leave sufficient play to work on.

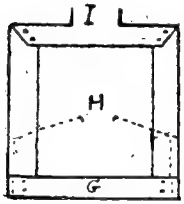


Fig. 13.

The last, but by no means least important part is the chimney. Most erroneous is it to suppose, as some have done, that its dimensions may be anything or nothing. Make it double the size than that here given, and you will simply have a wretched smoke-box.

Prepare two pieces of iron 9in. by 9in., mark them off as Fig. 14 Cut a piece of wood same size in every way, except length, as the receiving flange on top of bonnet. Keep them together and turn them round the wood block together, when this has been done, separate them and neatly rivet so that one nicely slides into the other — let them work smoothly. With the shears cut down about 1½in. in six places, as shown by dotted lines (Fig. 14), this on the inner tube only. Slightly bend outward the three pieces of metal, which, when thus relieved, will be found to form a spring and prevent the outer tube from falling, as otherwise it may be apt to do were this precaution not taken. In regulating the draught the top can be pulled up or down at will. As to the top, an arched piece of iron is riveted to end of outer tube, but as to the shape of design of this I would just refer to the showman who said, "My little dears, they are penny plain and tuppence color'd, so you pays yer money and takes yer choice." My readers can get the glasses cut by any local dealer. Micro-glass

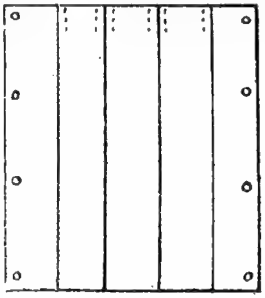


Fig. 14.

LIME-LIGHT JETS,

Wholesale, Retail & Export, Direct from the Maker,

10s. POST FREE Special Blow-through Jet, Complete, with Cog-wheel Lime Turner Lever Taps, &c. Best Make and Finish Guaranteed. **10s.**

Illustrated List Free to any part of the World.

F. BROWN, 13, Ossulston St., London. N.W.

COMPRESSED OXYGEN, HYDROGEN, &c.

In Steel Cylinders with IMPROVED VALVES.

Easy to open and close, impossible to turn on gas suddenly. Regulator Taps unnecessary.

LOWEST PRICES.

THE GAS COMPRESSION COMPANY,

114, Princess St., Manchester.

SANDS, HUNTER & Co.,

Photographic Apparatus and Lanterns,

NEW AND SECOND HAND, BY ALL THE BEST MAKERS.

Lanterns and Operator let out for evening entertainments for children, &c. Terms Moderate.

20, Cranbourne St., Leicester Square, London, W.C.

WRITE TO E. BAKER,

86, Fisherton St., SALISBURY.

FOR

Lanterns, Saturators, Slides, Tubing, Cylinders, &c.

And all Appliances for Exhibition he can supply you equal to any London House, and give Information to Clients FREE.

A BOON TO LANTERNISTS!

SCOTT'S PATENTED

WARM AIR SATURATOR

36s (2 hours), and 50s. Bright Copper (4 hours).

Are still being made by the same experienced staff of work-people as before the death of the patentee. Each one is **Tested** before being sent out.

Lanternists all over the World are using them, with increased and intense satisfaction.

FEATURES.—Oxygen only required! A Second Bag or Cylinder dispensed with!! Greater Brilliancy than with Hydrogen Gas!! Less working cost!!! Safe in the hands of any novice!!!! **Explosions Impossible!!!!!**

Not one of Scott's Saturators has yet come to grief!

SCOTT'S SATURATOR LIMELIGHT

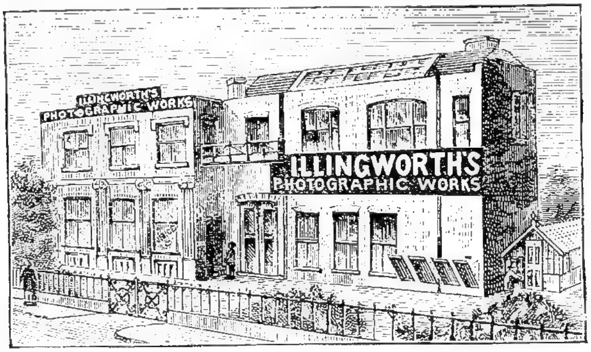
is next to intense **Electric Light!!** With Ordinary Mixed Jets up to 400 Candles! If the same Jets are adapted (costing 7s. 6d. each) up to 600 Candles! With Scott's Special Jets (30s. each) up to 800 Candles.

Write to **SCOTT & CO.,**

401, COWBRIDGE ROAD, CARDIFF.

Open for a Partner in Saturator, or will Sell the Patent Rights.

Also for Sale the Patent Rights of the "**Verak**" **Camera and Lantern**, which projects Lantern Photos in Natural Colours on the Screen without painting. This should be a **Fortune** for a Camera Manufacturer. See descriptions thereof in the February, 1891, number of *The Optical Magic Lantern Journal.*


ILLINGWORTH'S PHOTOGRAPHIC WORKS
ILLINGWORTH'S PHOTOGRAPHIC WORKS

In our New Premises we have laid down an extensive plant for making

ENLARGEMENTS

All prints are made by the most skilful workmen with the Best Apparatus, in the shortest possible time, and photographers cannot be better served than at

ILLINGWORTH'S,

WILLESDEN JUNCTION, N.W.

IF YOU WISH TO KNOW

1.—What focus of lens is required to produce a certain size of disc, at a given distance;
2.—What size of disc can be produced by a lens of given focus at a stated distance;
3.—What distance a lantern must be from the screen to produce a certain sized disc with a lens of given focus;

SEND 2½d. FOR A

READY REFERENCE TABLE

(On Cardboard) By J. HAY TAYLOR.

FASTEN IT ON THE LID OF LANTERN BOX.

TAYLOR BROS., 56, Chancery Lane, London, W.C.

HUGHES'

New Pattern Patent

PAMPHENGOS LAMP.

NEARLY 3,000 SOLD.

GREAT IMPROVEMENTS.

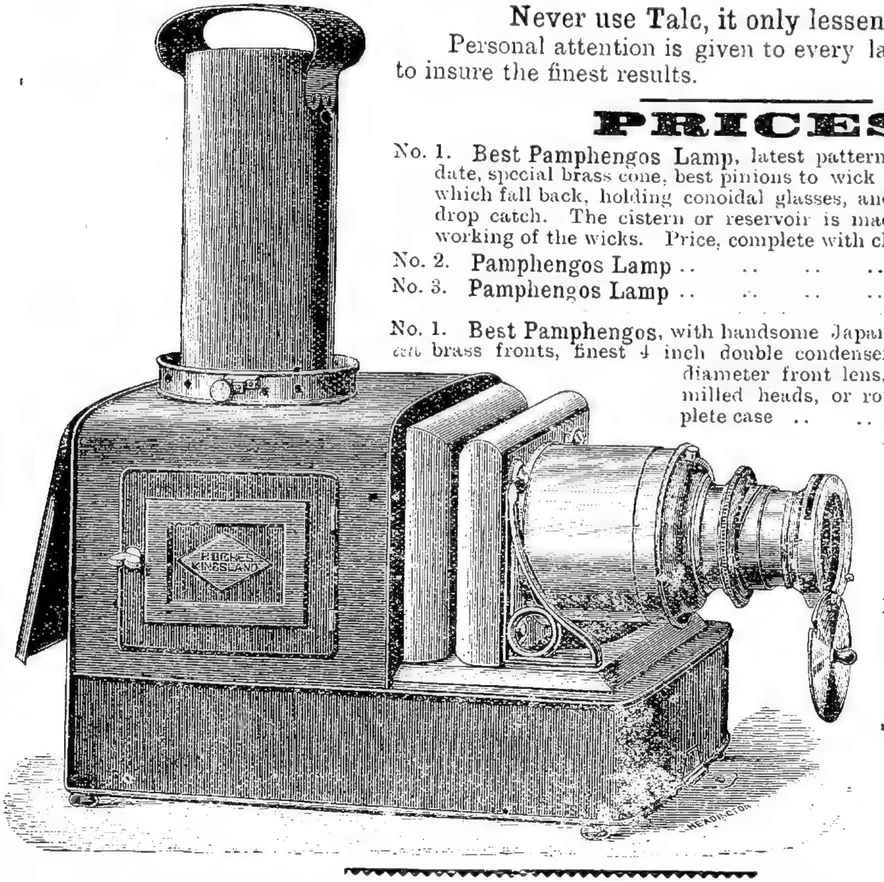
AN INTENSELY WHITE LIGHT! PERFECT COMBUSTION!
NO SMELL OR SMOKE! AN EVENLY ILLUMINATED FIELD!

Sectional Conoidal Glasses, Impervious to Heat and Proof against fracture.

The Reflector is used in its entirety, and the essential parts are not cut away for sight holes, and being outside the glass is not affected by the products from the consumed oil.

FULL VOLUME OF LIGHT AT ALL TIMES!

The perfect combustion of this lamp, together with its general plan of construction, enables it to burn perfectly at any time without the aid of dampers or chimney lengtheners, which are evils to be eschewed. The Pamphengos chimney is pulled out to its full length when first lighted, and the lamp at once burns with full volume without any adjusting, if directions sent are adhered to.



Never use Talc, it only lessens the light.

Personal attention is given to every lamp in manufacturing to insure the finest results.

PRICES,

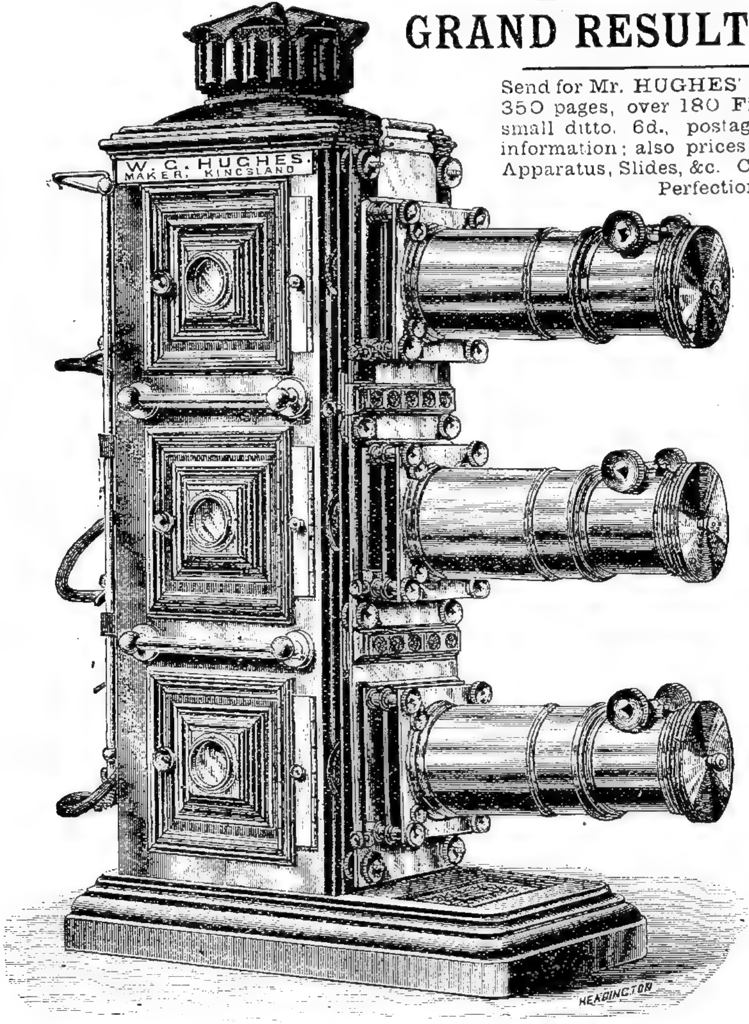
No. 1. **Best Pamphengos Lamp**, latest pattern, with improvements to date, special brass cone, best pinions to wick tubes, also hinged doors, which fall back, holding conoidal glasses, and secured at the revited drop catch. The cistern or reservoir is made deep to allow of free working of the wicks. Price, complete with chimney ..	£2 2 0
No. 2. **Pamphengos Lamp**	£1 10 0
No. 3. **Pamphengos Lamp**	£1 1 0

No. 1. **Best Pamphengos**, with handsome Japanned body, elegant solid cut brass fronts, finest 4 inch double condenser, and high class large diameter front lens, with rack and double milled heads, or rotary focussing, in complete case	£6 6 0
No. 2. **Pamphengos**, similar to above handsome brass fronts, 4 inch condenser, double combination lens rack and double milled heads, in complete case	£4 4 0
No. 3. **Co-operative Pamphengos**, 4 inch condensers, double combination lens,	£2 10

The Universal Lantern with 4 inch condensers. 4-wick lamp, patent combination front lenses, rack & pinion in case,	£1 7 6

W. C. HUGHES, Brewster House, Mortimer Rd., Kingsland, N.

THE MALDEN TRIPLE.



GRAND RESULTS UNEQUALLED.

Send for Mr. HUGHES' Grandly Illustrated Catalogue, over 350 pages, over 180 Fine Wood Blocks, 1s., postage 5d. small ditto, 6d., postage 2d., giving useful and valuable information; also prices of every description of Lantern Apparatus, Slides, &c. Cheapest and Best. Over 17 Patents Perfection in every Direction.

In proof of this, Mr. HUGHES has constructed a most magnificent Triple for B. J. MALDEN, Esq. The **Docwra Triple** also gained the only Prize Medal and Highest Award, and used nightly at the Royal Polytechnic Institution; also by COLIN DOCWRA, Esq., Dr. H. GRATTAN GUINNESS, Capt. SELWYN, M.P., JOHN DOCWRA, Esq., Madame ADELINA PATTI, &c. His high-Class Lanterns and Objectives supplied to Capt. C. REAPE and the Rev. FRANK WHITE, W. LANT CARPENTER, Esq., the Misses LEITCH; **therefore** go direct and have a first-class instrument, and not the Commercial. Teachers' Aid Science Lantern for all purposes, Oxy-hydrogen Microscopes, &c. **Patent Presto** Carrier. 60,000 Slides from 6d. each; 300 Lectures Sets. The **Patent Bijou** Enlarging Lantern, with Rectangular Con- perfect results scientifically considered—Special, 4¼ by 3¼. £7 10s.

Larger Sizes.

PRACTICAL INSTRUCTIONS.

BIUNIAL, Handsome Mahogany, Elegant Brass Fronts, Best Front Lenses,

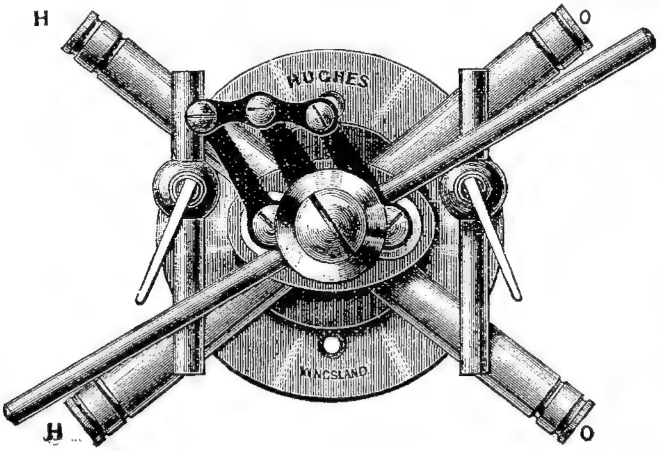
£7 15s. 0d.

The New Patent

Portable Bi-unial Lantern,

FOR TRAVELLING.

The front folds over, which is covered by the body, itself thus forming a case both unique and portable.



PATENT DOUBLE PLUG

STAR DISSOLVING TAPS.

NO MORE EXPLOSIONS!

A GREAT INNOVATION!

PERFECTLY CONSTRUCTED.

Double £1 12s.; Single £1 10s.

THE NEW PATENT

SIMPLEX DISSOLVING JET,

A Perfect Shut-off Jet, for either Single, Double or Triple Lanterns, acting the same way as the Four-way Dissolving Taps.

LANTERN SLIDES—50 Coloured Slides loaned for 3s. in Special Grooved Boxes.

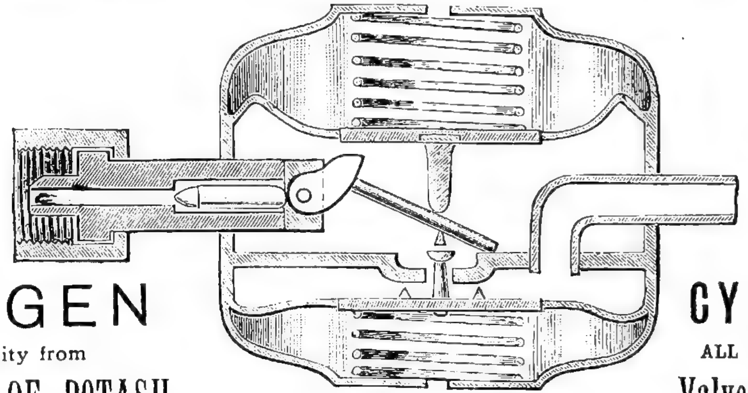
W. C. HUGHES, BREWSTER HOUSE, MORTIMER RD., KINGSLAND, N.

ASK YOUR OPTICIAN FOR

DUPLEX REGULATOR

PERFECT FOR DISSOLVING.

30s. **30s.**



OXYGEN
Speciality from
CHLORATE OF POTASH.
Patentee of the Bourdon Safety Gauge.

CYLINDERS
ALL SIZES IN STOCK.
Valves and Fittings.
Patentee of the Bourdon Safety Gauge.

CYLINDERS FILLED WHILE CUSTOMER WAITS.

Manufacturer—**A. CLARKSON,**
28, BARTLETT'S BUILDINGS, HOLBORN CIRCUS, LONDON.

THE EXTRAORDINARY RAPIDITY OF **The Mawson Plates** MAKES THEM SPECIALLY USEFUL

For Detective Camera and all Instantaneous Work.

MAWSON & SWAN,
NEWCASTLE-ON-TYNE, and 33, SOHO SQUARE, LONDON, W.

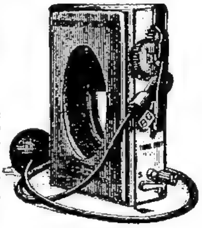
THORNTON-PICKARD
"TIME" AND INST. SHUTTER

Is in use all the World over, and has by far the Largest Sale. This is the best Testimony as to its sterling merit. Price from 18s. 6d. Speed Indicator 3s. 6d. Extra.

"I find absolutely no vibration whatever in either the "Time" or "Instantaneous" movements, free om from which I have found in no other shutter (and they are many) that I have tried." —F.D.

"The 'Time and Instantaneous' Shutter of your make that I now have has been in constant use for nearly two years, and is as good as new. It has never failed me once."—M.T.

" I may say that I have tested a number of shutters, and am satisfied that the Thornton Pickard is the first." —T.D.W



CATALOGUES POST FREE. The THORNTON-PICKARD MANUFACTURING COMPANY, ALTRINCHAM, near MANCHESTER

is best, in consequence of its standing greatest heat.

In conclusion I would only add, that the foregoing instructions are not for constructing an elaborate instrument, but a plain, durable and useful article, and which the writer feels sure will find a welcome corner on one of the many shelves to be found in any lanternist's den.

——:o:——

Editorial Table.

Blue Book.—A new volume, termed the *Blue Book for Amateurs*, has just been published by Mr. Walter Sprange, 1, Church Court, Clements Lane, E.C., at 5s. It is F'cap 8vo. in size, and contains about 450 pages of names and addresses of members of photographic societies, besides a couple of interesting illustrations.

Catalogues.—Mr. F. W. Weeks, 21, Thorpe Rd., Forest Gate, E, has issued a new list, copy of which we have received. Anyone interested in slide making, and would like to have special original slides or sets of their own, will do well to send for this new addition of circular, in which will be found many novelties in the way of slides.

Mr. C. F. S. Rothwell, who has opened new premises as a photo dealer, at 8, St. Mary's Street, Manchester, has issued a small catalogue, in which is listed goods of high class. We learn that Mr. Rothwell intends to put upon the market shortly an entirely new form of hand camera.

——:o:——

Correspondence.

RE "LANTERNIST'S" COMPLAINT.

(*To the Editor.*)

Dear Sir,—In reference to the "grumble" of the "Liverpool Lanternist" in your last issue, I do not think he has much to complain of if he can hire slides, cylinder, regulator, &c., for the prices he names. Taking slides, in the first instance, what sort of a slide can you hire in London for less thsn 1s. to 1s. 6d. dozen? or if cheaper, is it worth wasting the gas on them? And then the cylinders, 1s. is always paid for this, and anyone in London who would charge for less than 6ft. of gas at a time would indeed be a novelty.—Yours truly,

"LIMELIGHT."

OXYGEN FROM CYLINDER, AND GAS FROM THE MAIN WITH MIXED JETS.

[*To the Editor.*]

Dear Sir,—A correspondent in last issue propounded what he called a "theory" on the above subject, and invited criticism thereon. No one could have read his remarks without feeling convinced that the writer knew little or nothing about limelight apparatus.

He commenced his argument by stating that roughly speaking a 40 ft. cylinder has a normal capacity of 2 ft. What nonsense!

Is his lantern condenser roughly speaking 2 ft. in diameter? Are his limes roughly speaking 15 inches in circumferance? Are his discs roughly speaking from 80 to 120 ft. in diameter? Is he himself roughly speaking 35 ft. high? And yet these comparisons have the same proportionate error only. It would be simply waste of time to reply to the remainder of this truly wonderful theory (?) and neither would it be of any practical interest to the ordinary lanternist who understands his apparatus. If the matter was really worth entering into further, no one would be more ready to oblige than—Yours faithfully,

Brighton. HORACE HILTON,
Limelight Expert.

STOPPING UP GAS BURNERS, &c.,

[*To the Editor.*]

Dear Sir.—The dodge mentioned in your notes last issue *re* blocking gas brackets is much inferior we think to the little teat enclosed. These we have used since the general introduction of cylinders, both for stopping gas jets, and also for putting on regulators. In the latter case it serves the double purpose of keeping dirt from getting into regulator, and also should the cylinder valve be leaking, the regulator with this on will fill with gas, and thus automatically stop any escape.

Many good wishes for success of your excellent journal.—Yours truly, W. BANKS & CO.,

Bolton.

[The article enclosed was an india rubber teat, similar to those used for a baby's nursing bottle.—Ed.]

GASES AND GAS-BAGS.

[*To the Editor.*]

Sir,—Replying to "Expert," when asserting that gas-bags would soon be things of the past, I was simply stating a fact; even good ones are now practically a drug in the market and can be purchased secondhand for a mere song. I cannot quite see how "Expert" can make oxygen gas in small quantities at 2¼d. per foot. Chlorate of potash is, or was a short time ago, 10½d. per lb., and "Expert" would be fortunate if he could make 2lbs. fill a 9ft. gas-bag, not to mention the cost of manganese, wear of retort, firing, and time, and in my opinion, a sum not less than sixpence must always be allowed for the use of weights when exhibiting away from home, which adds ½d. per foot to the cost of the gas.

Now as regards the good and cheap compressed gas I have no intent in advocating any particular maker's oxygen to the detriment of the others; were I to do so I should certainly take some precaution to ascertain that my pet maker's really was the best.

The names of the makers whose gas Mr. Haddon analysed has, for obvious reasons, not been stated, but were they to be made public, it would no doubtbe a surprise to many.

There are three different qualities of gas now being made in London, and are, or should be, sold at different prices. These we will call X. Y. Z.

X is made from chlorate, and cost 4d. per foot.

Y is extracted from the air, and cost 3d. per foot.

Z is also extracted from the air, and costs 2d. per foot.

As a practical lantern operator I judge the quality of gas only by its effect when in use.

X gives the brighter and best light and should be used when working at a long distance from the screen, or for a large picture, or with the lantern microscope.

Y gives sufficient light for all ordinary purposes, such as showing coloured photographs or lecture sets.

Z is good enough for use in private houses, schoolrooms, or for experimental work, such as registering slides, &c., for it must be remembered that all lanternists are not millionaires, and the saving of 1s. 6d. or 2s. per exhibition is often a consideration.

There is a rough and ready but useful test for the quality of oxygen gas, and that is, by the noise produced in its combustion. I keep one particular jet for the purpose. Using regulators on the cylinder, the cocks of this jet are turned fully on, if the gas is good there is no noise whatever; if slightly impure, the cocks must be turned off a little to get a quiet light, and with the worst samples of gas they must be nearly closed to secure quietness, and the light suffers proportionately. In these experiments the same regulators are used, and the bellows are fully inflated before the cocks are opened.

Those who constantly use oxygen gas know at once whether the quality is good, bad, or indifferent; but the ordinary amateur must depend to a great extent on the dealer, and not try to purchase too cheaply, as it has been whispered that some dealers (all men have enemies and jealous rivals) keep all three qualities in stock and supply that which will best suit their customer's purpose, I mean his price.

Mr. Spawforth's argument in favour of the safety of using a mixed jet with hydrogen direct from the main would be unanswerable if his premises were correct, but he forgets, or perhaps does not know, that the gas-main pressure is equal to a column of water from 1½in. to 2in. only, whereas the pressure from a regulator is never less than 12in. and is more often 20in. or 30in.; and again, a cylinder has no outlet except in the direction of the jet. On the contrary, the gas-mains have thousands of outlets with a light at each, not to mention the comparability of such a large volume of gas as there must be in the mains. To illustrate what is meant, let him blow down the nearest gas bracket when other burners in the house are alight and see what will happen.

I know it is a practice with some operators to supply the mixed jet direct from the main, but have these persons ever heard of the explosion which tore up the pavement of several streets near Tottenham Court Road some twelve years' ago, which was caused by the mixture of common air in the gas-mains? How much more likely is an explosion to occur when oxygen gets into the main instead of common air.—Yours truly,

C. GOODWIN NORTON,
38, Manchester Street, W.C.

——:o:——

Notes and Queries.

Shade asks if Mr. Stevenson has any patent for the reflector in place of door of lantern on page 55, as he would like to adopt it, for he always lectures and operates himself at the same time. Mr. Stevenson gave the information for the use of anyone who cared to adopt it.

Amateur.—In last journal you say you use the Lawson Saturator; would you please say (1) what you saturate it with; and (2) if you consider it quite safe? *Answer.*—(1) We use benzoline; (2) we have used it under all conditions, and as regards the identical one which we have, must say it is perfectly safe.

J. G. Thompson.—We cannot supply name and address of writer, it would be a breach of trust.

Aurora Optical Manufacturing Co. (Topeka).—The makers of the apparatus you mention are The M'Intosh Optical Co., Wabash Avenue, Chicago.

W. H. H. writes: Will you give me a list of the most useful photo apparatus for making lantern slides, and the cost of same. I am a beginner, and have no apparatus? *Answer.*—You will find particulars in "Slide Making," by A. R. Dresser. It was published by the now extinct Fry Manufacturing Co., but most dealers have copies. Price 6d.

J. Clifton.—We received your letter with photograph of saturator, and wrote you to address given, but the letter was returned marked, insufficiently addressed. Please send full address.

Exhibitor.—Messrs. Riley Bros., of Bradford, can supply you with coloured window show-bills on which you can print particulars of your entertainment.

Devon writes: I have a pair of gas-bags that I bought from a local dealer who has left the country. They are nearly new, but they leak so badly that they are no use. How can I repair them? *Answer.*—If the leak is at any of the seams, open it a little more, apply some India-rubber cement and close again; if the leak is in the body fasten a patch of waterproof on with the cement.

J. J. Boutwood.—We know of no maker except Mr. Pumphrey, of Birmingham, who sends out books of paper prints of slides.

John Waswell writes: About two years ago I bought from Messrs. Riley Bros., Bradford, one of their "supurb bi-unial lanterns" (£12), with blow-through jet and 6in. focus lens. Some ten months ago I got telescopic tubes fitted, and exchanged my 6in. lenses for 10in.; while I had the 6in. lenses the lantern gave every satisfaction, but since I changed them for longer focus I cannot get all the picture in focus, if one part is in focus other parts are not. Can you tell me where the fault is and what are my remedies? *Answer.*—Your lenses evidently do not give a flat field. See article in this journal for October, 1892, page 112.

Ion writes: I have made a shelf in my lantern box to run in grooves, and underneath have fixed a sheet of tin, to which is screwed a piece of sheet iron bent to the shape and size of a fire brick. On the top of the shelf my saturator is laid, with two holes at end of box to fix tubing on nozzles of saturator. The fire brick is heated and placed in the sheet iron receptacle to warm the saturator, but I should be glad if you would inform me if there is any danger of the heat causing the ether to expand sufficiently to burst the saturator. If there is no danger I think the heated brick preferable to hot water. *Answer.*—No fear of this need be entertained.

India asks: 1. Will a Dallmeyer No. 1 B. c.d.v. lens do well for an optical lantern with 4 inch double condenser and the etho-oxygen light, or would a cabinet (3 B) by same maker be better, I want a disc of about 20 feet? 2. What are the dimensions of a Lawson saturator, and is there a means of opening it for recharging with absorbent material when required? 3. Is it necessary to pack a jet with pumice powder? 4. Which is best to employ for a saturator, benzoline, ether or gasoline? 5. If I employ two saturators of the kind mentioned will it be well to use one oxygen bag with a T piece? *Answer.*—1. Either lens will answer, for 20 feet disc it all depends on the distance you can get from the lantern, No. 1 B is 6 inches focus, so distance from lantern to screen must be 40 feet, No. 3 B is 10½ inches focus and requires a distance of 70 feet. 2. About 4 inches on the base and 7½ high, not including the jet and inlet tube. No trouble about repacking need be anticipated. 3. No. 4. We employ benzoline by preference. 5. The second jet is branched from the first (see S in sketch in this issue), or the plan you suggest will answer.

H. H. H. 1. A greater angle of light is collected. You will find the subject of triple condensers fully treated in Taylor's Optics of Photography, advertised on the last page of this journal. 2. We had hoped to describe an excellent jet on a new principle in this issue, but could not get the illustration in time; it will appear in next. We hope to act on your suggestion.

Radjah.—Coat the glass with varnish, and when nearly dry press printed matter in contact, and when dry rub the paper away with a damp cloth and finger. The result however will not produce a high class slide.

TO REALIZE MR. STEAD'S IDEA.

THE LANTERN BIBLE.

Our Catalogue contains over 1000 Subjects, illustrating the Bible History from cover to cover. All the pictures are selected with special care from the works of the greatest ancient and modern masters; and the texts (numbering about 200 additional slides) carefully chosen by an experienced lanternist, who has also given close attention to their proper "display."

Help declares this to be "Much the most comprehensive of any series of pictures yet prepared."

Catalogue, post free, on application to

STEVEN BROS., 33, Osborne St., City, GLASGOW.

SLIDE MAKING

From NEGATIVES, PRINTS, SKETCHES, &c.
AND BEST COLOURING ONLY.

WILKINSON & CO.,

HOLMESIDE, SUNDERLAND.
Telegrams, "OXYGEN, SUNDERLAND." ESTABLISHED 1859

Dissolving View Magic Lanterns and Slides

Photographic Apparatus, Scientific Instruments and every description of miscellaneous property.

MR. J. C. STEVENS begs to announce that he holds Sales of the above, every Friday, at half-past twelve precisely, at his great Rooms, 38, King Street, Covent Garden, London.

Gentlemen wishing to include property in these Sales are requested to send particulars one week prior to sale.

PURE COMPRESSED OXYGEN & COAL GAS.

STEEL CYLINDERS WITH IMPROVED VALVES, EASY TO REGULATE, CAN BE USED DIRECT ON TO LANTERN.

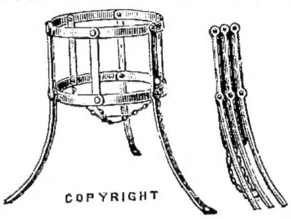
ALL KINDS OF BRASS & METAL FITTINGS MADE ON THE PREMISES, INVENTORS' IDEAS WORKED OUT.

GAS COMPRESSORS AND TEST PUMPS.

S. O. LEES,
FAIRFIELD STREET, LONDON ROAD,
MANCHESTER.

THE SCOTCH & IRISH OXYGEN CO., LD.

ROSEHILL WORKS,
POLMADIE, GLASGOW.



Collapsible Cylinder Stand.

(BRIER'S PATENT)

Dia. Cyl.	4in.	5½in.	7in.	9in.
Price	7/6	9/-	12/6	15/-

Post Free United Kingdom.

SLIDE PAINTING COLOURS,

SPECIALLY PREPARED for PAINTING MAGIC LANTERN SLIDES

In Collapsible Tubes and Glass Pots.

Boxes fitted with Varnish Colours, 5/-, 10/6, 15/-, and 30/- each.
,, Water ,, 2/-, 5/-, and 21/- each.

Just Published, "A Manual on Painting on Glass and How to Use the Magic Lantern," 1s. each.

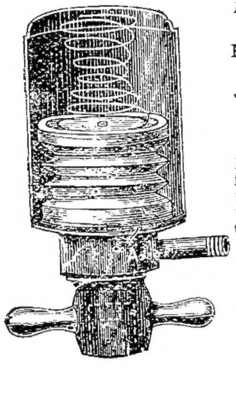
CRIMSON.
J. BARNARD & SON
19 BERNERS ST.
LONDON W.

Also Manufacturers of the New Chromo Printed Magic Lantern Slides
5s. per Set of 12 Slides, 3¼ in. Square. 80 Subjects,
Price Lists Post Free.

J. BARNARD & SON,
MANUFACTURING ARTISTS' COLOURMEN
RETAIL, WHOLESALE AND EXPORT.
19, BERNERS STREET, LONDON, W.

Beards' COMPRESSED GAS REGULATOR

Medal awarded, Sept. 1891, Royal Cornwall Polytechnic Exhibition.



Eclipse Single Lantern Slide Carrier
HIGHLY COMMENDED.

"Pringle Beard" Miniature Telescopic Lantern.

Fitted with special helioscopic jacket focussing. Skewed gearing for lime turning off jet. Packs into polished mahogany case: outside sizes, 8½in. by 6½in. by 7½in. high.

To be had at any Opticians.

R. R. BEARD,
62 Alscot Road, Bermondsey,
London S.E.

WRAY'S LANTERN LENSES.

PRICES WITH RACK AND PINION.	£	s.	d.
6 inch equivalent focus aperture nearly f/3	4	10	0
9 inch ,, aperture fully f/4	5	10	0
6 inch and 9 inch lenses both fitting one rack jacket ..	9	10	0

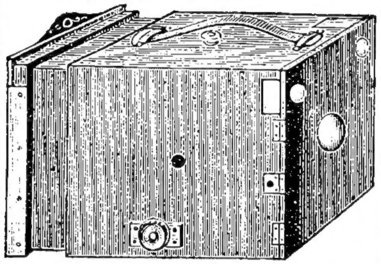
10 % Discount for Cash with Order

List of Photographic Lenses free.

ILLUSTRATED CATALOGUE OF TELESCOPES AND MICROSCOPES FOR STAMP.

W. WRAY,
OPTICIAN,
NORTH HILL, HIGHGATE, LONDON, N.

W. TYLAR'S PERFECT CAMERA,
FOR HAND OR STAND USE.



Sunk Finders.
TIME AND INSTANTANEOUS SHUTTER.
12 PATENT SINGLE METAL SLIDES,
In Sling Shoulder Cases, fitted with Customer's Lens £3. Good Single Lens £3 10s. Good R. R. Lens, £5.

TYLAR'S
SINGLE
Lanternescopes
From 12·6 to 25/-
TYLAR'S
BINOCULAR
Lanternescopes
17·6 each.

TYLER'S TIT-BIT CAMERA
IS A FIXED FOCUS

HAND CAMERA,
With Double Finders, Very Small, Unobtrusive and a Good Worker. NOT A TOY.

Cloth covered Camera and 1 Slide ..	12	6
Shoulder Case of 6 Extra Slides ..	10	6
£1	3	0
Leather Covered Camera & 1 Slide..	15	0
Shoulder Case of 6 Extra Slides ..	12	0
£1	7	0

ON LOAN.—Any Society desiring a Set of Slides taken by these for Exhibition on a Lantern Night, shall have them by paying Carriage.

FULLY ILLUSTRATED PRICE LIST POST FREE, 3d.
W. TYLAR
High St., Aston,
BIRMINGHAM.

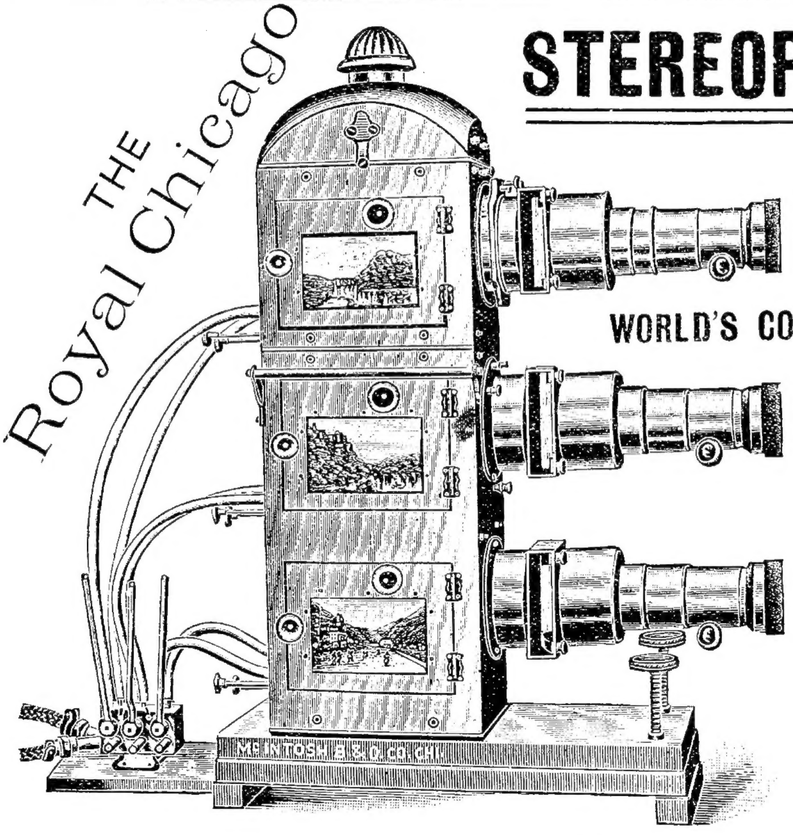
Square Cr. 8vo, cloth.
68 ILLUSTRATIONS, 3s. 6d.
THE
OPTICS OF PHOTOGRAPHY
AND
PHOTOGRAPHIC LENSES,
BY
J. TRAILL TAYLOR.

"One interested in the subject cannot invest 3s. 6d. to greater advantage than by procuring a copy of this work."—*Optical Magic Lantern Journal.*

"An excellent guide, of great practical use."—*Nature.*

"Even a beginner may, with a little attention, soon grasp all the saliant points of the subject, of which it need scarcely be said Mr. Traill Taylor is a master."—*English Mechanic.*

London:
WHITTAKER & Co., Paternoster Square



STEREOPTICONS.

Gas Making Apparatus,
Our Speciality for 1893
WORLD'S COLUMBIAN EXPOSITION
LANTERN SLIDES
We Manufacture, Import & Deal
Write for Catalogue.
Mention this Journal.

McINTOSH
BATTERY AND OPTICAL
COMPANY,
Chicago, Ill., U.S.A.

Printed by BRIGINSHAW & Co., 2, Aldersgate Buildings, E.C., and Published by the Proprietors, TAYLOR BROS., 56, Chancery Lane, E.C.

Digitized by the Magic Lantern Society

The Magic Lantern Society

http://www.magiclantern.org.uk/

Post-production coordinated by

MEDIA HISTORY DIGITAL LIBRARY

www.mediahistoryproject.org

Sponsored by the ACLS Digital Extension Grant, "Globalizing and Enhancing the Media History Digital Library" (2020-2021)